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ABSTRACT

A systemic approach to education reform emerged in the 1990s as one way of addressing policy fragmentation. This volume presents findings of a study that sought to: expand knowledge of state approaches to systemic education reform; examine district, school, and teacher responses to state reform policies in a small number of reforming schools and school districts; identify challenges at the state, district, school, and classroom levels to reforming education; examine the capacity of the educational system to support education reform; and provide guidance to policymakers at all levels of the education system as they design and implement education reform policies. During the first year of study, researchers conducted a review of literature on systemic reform, commissioned four papers, and held a national conference. The second stage involved intensive case studies of 12 reforming schools located in 6 reforming school districts in 3 states undergoing systemic reform--California, Michigan, and Vermont. The case studies targeted mathematics, reading, and writing instruction in grades 4-8. Stage three involved preparing state-level case studies and conducting cross-site analyses. Findings indicate that: (1) coherence among the elements of state education policy seems to facilitate reform in districts and schools; (2) communication about the reform agenda cannot be accomplished from the center only; (3) it takes time for educators to learn new content and approaches and for institutions to change; (4) the goals of reform may need to strike a balance between current and desired practice; (5) deliberate, consistent, and pervasive strategies to ensure equity are necessary; (6) capacity building must take into account organizational and individual needs; (7) consistency, alignment, and coherence may provide opportunities throughout the system, but states and school districts must design and use these systemic tools strategically; (8) capacity-building strategies must accommodate teachers' and administrators' involvement at multiple levels; (9) capacity-building strategies should include diverse populations; and (10) attention should be given to enhancing the capacity of external stakeholders. A total of 25 tables and 2 figures are included. (Contains 99 references.) (LMI)

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Studies of Education Reform

SYSTEMIC REFORM

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October 1996

The Studies of Education Reform were initiated by the former Office of Research in OERI under the guiding hand of its Acting Director, Joseph C. Conaty, currently Director of OERI's National Institute on Student Achievement, Curriculum, and Assessment.

Studies of Education Reform

The 12 studies were commissioned by the Office of Educational Research and Improvement (OERI) in 1991 and were all completed by fall 1995. Each study comprises three volumes. Volume I contains a discussion of the study, case study summaries of the schools or school districts examined, and recommendations. Volume II contains detailed case studies. Volume III is a technical appendix explaining the study's methodology. OERI is publishing all Volumes I as a set. Titles in this series are:

Systemic Reform
Early Childhood Reform in Seven Communities
Education Reform and Students At Risk
Parent and Community Involvement in Education
The Uses of Time for Teaching and Learning
Systemic Reform in the Professionalism of Educators
Study of Curriculum Reform
Assessment of Student Performance
Assessment of School-Based Management
School Reform and Student Diversity
Technology and Education Reform
Study of School-to-Work Initiatives

The other two volumes for each study are available through the Education Resources Information Center (ERIC) system.

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Preface

The reform of education has been a major focus of policymakers at the local, state and federal levels since the publication in 1983 of *A Nation at Risk*. Reform efforts have targeted all stages of education, from pre-school to school-to-work transition, and have addressed nearly every aspect of the public elementary and secondary education system: curriculum and assessment, teachers' preparation and their professional lives, school organization and management, technology, and parental and community involvement. To increase the knowledge base for identifying, implementing and sustaining successful reforms in these areas, in 1991 Congress requested the Office of Research at the U.S. Department of Education's Office of Educational Research and Improvement (OERI) to investigate education reform. In response, OERI identified and funded 12 studies of different aspects of current education reform, including a study of the systemic education reform movement.[1]

The Policy Center of the Consortium for Policy Research in Education (CPRE), in conjunction with the National Center for Research on Teacher Learning (NCRTL), was awarded the contract to conduct the Systemic Reform study. As used in this study and in developing approaches in a number of states, systemic reform embodies three integral components: the promotion of ambitious student outcomes for all students; alignment of policy approaches and the action of various policy institutions to promote such outcomes; and restructuring of the public education governance system to support improved achievement. This research, which built on studies of systemic reform undertaken earlier by CPRE in nine states, and on other studies of teacher learning and school organization and change, was designed to (1) expand our knowledge of state approaches to education reform, (2) examine district, school and teacher response to state reform policies in a small number of reforming schools and school districts, (3) identify challenges at the state, district, school and classroom levels to reforming education, (4) study the capacity of the educational system to support education reform, and (5) provide guidance to policymakers at all levels of the education system as they design and implement education reform policies.

The Systemic Reform study was conducted in three stages. In the first year of the study, we reviewed the emerging literature on systemic reform, and commissioned four papers that addressed issues related to the preparation and professional development of teachers and others in support of systemic reform, paying particular attention to the policy linkages between curriculum reform and teacher learning. These papers became the focus of a two-day national conference targeted to education policymakers and practitioners, and were used to refine the overall design of the second and third stages of the study. In the second stage, project staff conducted intensive case studies of twelve reforming schools located in six reforming school

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[1] These twelve studies are Assessment of Student Performance, Curriculum Reform, Early Childhood Education, Parent and Community Involvement in Education, School-Based Management, School-to-Work Transition, Student Diversity, Students at Risk, Systemic Reform, Professionalism of Educators, Technology and Uses of Time.

districts in three states that were undertaking systemic reform—California, Michigan, and Vermont. The third stage of the study entailed the preparation of state-level case studies and cross-site analyses that examined the scope, substance and coherence of state reform policies, teacher, school and school district reform activities in the context of these state policies, and the capacity of all levels of the system to support education reform.

The study's findings and methodology are contained in this three-volume technical report. *Volume I* begins with a summary of the literature review and commissioned papers (Chapter 1), the study methodology (Chapter 2), and the education reform strategies and policies in the three study states. In Chapter 4, we look across the schools, school districts and states in the sample to describe the strategies these sites used to develop a vision of reform, align relevant policies and support restructured governance systems, and the challenges they faced in implementing these strategies. Chapter 5 uses surveys of, and interviews with, teachers in our sites to characterize their instructional practices in mathematics and language arts in relationship to reform policies and opportunities for professional development. In Chapter 6, we present a framework for thinking about the concept of capacity and capacity-building strategies and policies in support of education reform, and examine how our sites used systemic tools to enhance the capacity of teachers and their schools. Chapter 7 identifies some common lessons for policymakers who choose to take a standards-based approach to instructional improvement, and suggests a set of research questions about both the role of capacity-building in systemic reform and broader aspects of education reform.

Volume II contains the case studies of California, Michigan and Vermont. These include more detailed information on state policies, and describe and analyze reform efforts in our small sample of reforming schools and school districts in each state. The findings reported in Chapters 4 through 7 of *Volume I* are based on data contained in these case studies, as well as the teacher survey. *Volume III* contains a description of the study methodology and copies of the interview protocols and teacher surveys used in the data collection.

Acknowledgments

We are grateful to the many people who assisted in this study. The study would not have been possible without the excellent cooperation of the teachers and school and school district administrators in our six study districts; state department of education personnel in California, Michigan and Vermont; and individuals in universities and other education organizations in these three states. We appreciate the time and effort that all of the respondents put into answering our numerous questions. The information and insights they provided us were invaluable.

We are indebted to Kimberly Bogdan (CPRE), David Gamson (Stanford University) and Jordy Whitmer (Michigan State University) who assisted us in the collection and preliminary analysis of the interview data for the Michigan, California and Vermont case studies, respectively. Chris Chiu (MSU) painstakingly analyzed the teacher survey data and produced the tables presented in Chapter 5 (Volume I) of this report. Jordy Whitmer organized these survey data.

Many individuals contributed to the overall design of the study. Our Advisory Panel reviewed our initial research plan and provided direction for the commissioned papers, national conference and site selection. Members of the Advisory Panel were Gail Burrell (Whitnell High School, Greenfield, WI), Jane David (Bay Area Research), Mary Kennedy (National Center for Research on Teacher Learning, MSU), David Mandel (National Board for Professional Teaching Standards), Andrew Porter (Wisconsin Center for Education Research, University of Wisconsin-Madison) and Kenneth Zeichner (University of Wisconsin-Madison). Cynthia Levinson prepared the review of literature on systemic reform with the assistance of Diane Massell. Jane David, Hendrik Gideonse, Judith Warren Little and Frank Murray contributed commissioned papers. Conversations with Deborah Ball, Thomas Corcoran, Susan Fuhrman, Diane Massell, Milbrey McLaughlin and Marshall Smith helped us conceptualize the study and think about ways of framing our analyses and interpreting our data. David Cohen and Thomas Corcoran also provided valuable background information on education reform in Michigan and Vermont.

We consulted several sources when designing our teacher questionnaires. Andrew Porter shared instruments and data from his teacher surveys with us. Joan Talbert, Sharon Bobbitt, Hilda Lynch, John Smithson and Iris Weiss helped us identify, obtain and interpret results from other teacher questionnaires.

This final report was greatly strengthened by reviews of earlier drafts by Deborah Ball, Richard Elmore, Susan Fuhrman and Jim Fox. We also thank Jim Fox for his support of our work over the life of this study. As our project monitor, he provided substantive and timely feedback on our draft products, facilitated our communication with OERI, and helped us through uncertain times.

The national conference would not have been possible without the assistance of Stacy Gands, Melissa Lomench, Lynn McFarlane, Patricia Michaels, and Debi Slatkin of CPRE. They handled all of the meeting logistics, prepared and disseminated background materials, and communicated with the 250 persons who attended the conference. Their hard work and attention to detail contributed to the success of the meeting.

We are especially grateful to Patricia Michaels, who produced the final report on a very short timeline. She patiently formatted our text and tables, and caught and corrected our errors before this document went to press. Additional secretarial assistance was provided during the course of the study by Stacy Gands, Robb Sewell and Dawn Weniger of CPRE and Wendy Reed of MSU.

Finally, this report is the culmination of a three-year collaboration by the authors. We designed the study, conducted the cross-site analysis, and reviewed all products as a team. We were individually responsible for the collection and analysis of data and the preparation of case studies for one state—Robert Floden for Vermont, Margaret Goertz for Michigan and Jennifer O'Day for California. In addition, Floden oversaw the analysis of the teacher survey data and wrote Chapter 5 (Volume I) with John Zeuli and Chris Chiu. O'Day wrote Chapter 6 and Goertz was the principal author of Chapter 4 of that same volume. We take collective responsibility, however, for the findings and views presented in this report.

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Executive Summary

The reform of education has been a major focus of policymakers at the local, state and federal levels since the publication in 1983 of *A Nation at Risk*. In the mid-1980s, states responded to this most recent call for education reform by raising course work standards for high school graduation, implementing and/or expanding their assessment programs, and raising standards for prospective teachers. A counter movement of "bottom-up" reform emerged later in the decade that focused on reforming and restructuring schools and the professionalization of teachers. The "top-down" mandates of the 1980s did little, however, to change the content of instruction (especially its focus on basic skills) or to alter the reigning notions of teaching and learning because, as some argued, fragmented and contradictory policies diverted teachers' attention and provided little or no support for the type of professional learning necessary. This same fragmentation also made it difficult to sustain or spread the very promising reforms taking shape in individual schools or groups of schools.

A more systemic approach to education reform emerged in the 1990s as one way of addressing policy fragmentation. As used in this study and in developing approaches in many states, systemic reform embodies three integral components: the promotion of ambitious student outcomes for all students; alignment of policy approaches and the action of various policy institutions to promote such outcomes; and restructuring of the public education governance system to support improved achievement. This study, conducted by the Consortium for Policy Research in Education (CPRE), in conjunction with the National Center for Research on Teacher Learning (NCRTL), was designed to (1) expand our knowledge of state approaches to systemic education reform, (2) examine district, school and teacher response to state reform policies in a small number of reforming schools and school districts, (3) identify challenges at the state, district, school and classroom levels to reforming education, (4) study the capacity of the educational system to support education reform, and (5) provide guidance to policymakers at all levels of the education system as they design and implement education reform policies.

Our findings, which are summarized below, are based on case studies of twelve reforming schools located in six reforming school districts in three states that are taking somewhat different approaches to systemic reform—California, Michigan, and Vermont. In addition to interviewing educators, administrators and policymakers at the school, school district and state level, we surveyed and interviewed 60 teachers in our sample schools. We present our findings with two cautions, however. First, our sample of districts and schools was purposive, drawn to capture the policies and practices of reforming schools and districts located in reforming states. On the one hand, this means we must be careful in generalizing our findings to other schools within each of our districts or to other districts within each of the three study states. On the other hand, to the extent that these states, districts and schools which have different fiscal, political and demographic characteristics face similar challenges in reforming their educational practices, we have reason to believe that what we are

observing in our sample sites will have applications to other states, schools and school districts. Second, it is too early in this reform movement to assess the impact of any particular state, district and/or school strategy. Although California initiated some components of what has become known as "systemic reform" ten years ago, some linkages are incomplete (like professional development and assessment) or weakly specified (like pre-service education). Michigan and Vermont have been at their reforms for only four or five years. Therefore, this is not a report of "what works" in systemic reform. Rather, it describes the approaches used by educators and policymakers as they undertake major reform efforts in diverse settings and the challenges that confront them, discusses how those moving in directions consistent with systemic reform see the contributions of state policy to their efforts, and describes how our study sites are using elements of standards-based reform to enhance systemic capacity.

Challenges to Implementing Systemic Reform

Developing a Reform Vision

Although the three states in our study are taking different approaches to systemic reform, reflecting variations in their demographic, economic and political contexts, all have developed a general vision of reform that calls for more challenging standards for all students. These visions differ, however, on the nature of the desired student outcomes, the disciplinary base of the standards and the role of the teacher in reform. The states also differ in how their vision is articulated to teachers, school districts and the public, but in all our sites, we found evidence of a tension between enacting the reform vision and maintaining current practice. Some state and local policymakers addressed these concerns through concerted public outreach activities. In California, a failure to build broad public support for its reform efforts contributed to the demise of a major component of its systemic reform strategy—the CLAS assessment.

Struggling for Policy Coherence

All three states have also taken major strides in developing a more coherent policy structure, but all face four major challenges in this task: (1) curricular challenges, including a lack of curriculum alignment across grade spans, a tension between presenting curriculum in a disciplinary or interdisciplinary structure, and implementing multiple curricular reforms at the elementary level; (2) aligning the curriculum taught and the assessments used to measure students' knowledge of that curriculum; (3) linking teacher preparation and professional development with other reform activities; and (4) creating the stable political environment necessary to nurture and maintain state reform efforts.

Restructuring the Governance Structure

The schools, districts and states in our sample also were taking steps to devolve authority and restructure schools to foster innovation and education reform. We found that leadership and a culture committed to and supportive of change at both the school and district levels were major factors in facilitating educational change. Yet, several issues emerged in our sites. First, state and local reform policies and practices are not clear about the role(s) the district office and schools should play in building capacity and supporting teacher and school reform. Second, restructuring the school day and/or school week to free time for school planning and professional development activities is not always sufficient given the complexity of the changes teachers are being asked to make and competing demands on their time. Third, bureaucratic constraints, such as district control over the use of professional development time, have the potential to inhibit reform efforts at the school level.

Addressing Diverse Student Needs

Finally, a well-designed reform strategy must increase educational opportunities for *all* children. The sites in our study developed strategies at all levels of the system to address the needs of children who bring the challenges of poverty, limited English proficiency or disabilities to the school house door. These included moving away from categorical program structures, targeting resources on low-performing and/or high minority schools and school districts and their staff, restructuring schools and restructuring curriculum to promote equity.

Teachers' Practices and Influences on Their Practice

All of the districts in our sample had, or were in the process of developing, outcomes in mathematics and language arts that reflect their state's reform vision. And our sample of teachers in these districts reported a pattern of classroom practice that is moving toward the recommendations of reformers. In mathematics, problem solving and communication about mathematics are major areas of emphasis for these teachers, particularly at the elementary school level. At the middle school level, there is more time spent on traditional mathematics topics but, for most teachers, there is also an emphasis on helping students learn to communicate about mathematics. In language arts, teachers' reported practices are also generally consistent with the direction of reform called for in state and national curriculum recommendations. Many of the teachers report a focus on the process of writing, on understanding and analysis, and on encouraging students to construct meaning from texts.

But in both mathematics and language arts content areas, some of the teachers in our sample suggested that they were hesitant to completely give up some of the content they

taught in the past. In addition, the reform emphasis on integration of content across subject areas is embraced by some teachers, but not by others. This is not necessarily at odds with the intentions of reformers, who may advocate a mix of content, rather than a complete shift. Teachers' desire to mix old and new practice is consistent with their reports that state policy instruments were only one of several influences on their instruction, and that their own beliefs and knowledge about the subject and of their students were generally a greater influence. It also reflects the considerable control they feel they have over curricular and instructional decisions.

Finally, most teachers in our sample report a high level of support for professional development. The support they receive is sometimes consistent with systemic reform initiatives in a particular state, such as Vermont teachers who receive released time from teaching to participate in the mathematics teacher networks. We also found that sample teachers' rates of participation in specific activities is consistent with reform initiatives, with more teachers engaged in mathematics-related inservice, where the reforms seem most demanding.

Capacity Building and Systemic Reform

If all students are to learn to new standards, not only teachers, but administrators, teacher educators and other participants in the education system must change their roles and expectations. Educators, researchers, and policymakers are beginning to explore different ways to enhance the ability of the system and its teachers to improve student learning. But before they can design effective policies, policymakers must determine *what* capacities are needed and what mechanisms and strategies might foster their development. Most capacity-building strategies in education today are targeted on individual teachers and are designed to enhance their knowledge and to improve their instructional skills through the provision of workshops and university courses. Yet, our data and that of other researchers suggest that the traditional model of professional development reflects a limited conception of the dimensions of teacher capacity necessary to support and sustain instructional reform and ignores the role of the school and other communities of practice in teacher learning and educational improvement.

Dimensions of Capacity

Our framework for thinking about the nature of teacher and organizational capacity in the context of educational reform is organized around three central themes. First, we argue that teacher capacity, and the capacity of other participants in the educational system is multidimensional, encompassing knowledge, skills, dispositions and views of self. In addition, these dimensions are interdependent and interactive. Second, individual capacity

interacts and is interdependent with organizational capacity. Teacher capacity, for example, is developed through both individual activities and through interaction with communities of practice and with others in their school. School, or organizational capacity, is also multidimensional, and reflects vision and leadership, collective commitment and cultural norms to realize the vision, knowledge or access to knowledge, organizational structures and management conducive to learning and improvement, and resources (human, material and temporal). Third, organizational capacity, like individual capacity, can be galvanized and nurtured through infusion of ideas and perspectives from outside its ranks.

Systemic Reform as Capacity Building

The literature advocating systemic reform and our study suggest five potential avenues building capacity within the broader systemic reform strategies. These are: articulating a vision for reform, providing instructional guidance toward the realization of that vision, restructuring governance and organizational structures so as to facilitate learning and more effective delivery of services, providing needed resources, and establishing evaluation and accountability mechanisms that provide incentives for improvement while addressing problems and barriers. These tools, however, are only as good as their use. A lesson gleaned from our three states is that both the design and strategic use of systemic tools, such as assessment and professional development, can increase or decrease their effectiveness for capacity-building. For example, the use of state assessment as an instrument of accountability may be in tension with its potential use as an instrument for teacher and system learning. Similarly, for professional development to contribute to long range capacity building, states must develop multi-faceted approaches for teacher development and schools and school districts must develop strategic approaches for connecting the professional development of teachers and organizational development and school change.

Continuing Challenges

Finally, we identified a set of challenges to building systemic capacity. First, learning must be placed at the center of all reforms—not only improved learning for students but for the system as a whole. Second, resources are a critical aspect of both individual and organizational capacity. In these times of fiscal constraint, policymakers and educators must look to creative ways of expanding human, material and temporal resources, such as restructuring and reconfiguring school schedules to free teacher time for professional development, and building partnerships with professional organizations, universities and other institutions, such as museums. Third, teachers participate in many and varied professional development activities. While having the advantage of accommodating teachers' multiple interests and different levels of knowledge and skills, districts must develop strategies for managing the inherent fragmentation posed by the variety of opportunities and providers. Finally, policymakers must attend to building public capacity and attend to the needs of students outside of their schools.

Implications for Policy and Policymakers

Our study suggests a set of lessons for states and localities to consider if they choose to take a standards-based approach to instructional improvement. Among these lessons are the following:

1. Coherence among the elements of state education policy seems to facilitate reform in districts and schools. But a guiding vision of reform that goes beyond subject-specific content may be important for assisting states, localities and schools in their efforts to establish and maintain coherent reform efforts.

2. Communication about the reform agenda cannot be accomplished just from the center. Teachers and administrators who were knowledgeable about the reform goals and strategies were those who were involved in using them.

3. It takes time for educators to learn new content and approaches and for institutions to change to facilitate new instruction. The experience of our study states demonstrates the importance of developing strategies and mechanisms that allow for consistency over time, even in the face of political and fiscal changes. Reformers should attend to building stable alliances among policymakers, developing strategies for public learning and involvement, developing supportive mechanisms outside the political and bureaucratic system, paying careful attention to the sequencing of reform elements, and designing reasonable and appropriately-timed accountability systems.

4. The goals of the reform may need to strike a balance between current and desired practice, between old and new ways.

5. Deliberate, consistent, and pervasive strategies to ensure equity are necessary if the reforms are to be for all students.

6. Capacity building efforts must take into account the organizational and systemic needs for capacity as well as the needs of individuals within the various units, and must address the multiple dimensions of both individual and organizational capacity. In addition, individual and organizational capacity benefit from on-going, outside support.

7. Consistency, alignment and coherence can provide opportunities for learning throughout the system, but states and school districts must design and use these systemic tools strategically to increase their effectiveness for capacity-building .

8. Capacity-building strategies need to recognize that there are multiple levels for involvement of both teachers and administrators. Mechanisms that allow participants to move in and out of professional development activities as appropriate over time will be important for sustaining involvement.

9. Capacity building strategies and activities, like all other aspects of reform, must pay attention to diversity. These strategies include targeting teachers and schools serving large numbers of disadvantaged students, targeted attention to the recruitment and professional development of teachers of color, and attention to preparing all teachers to meet the needs of culturally and linguistically diverse student populations.

10. Stakeholders and supporters outside the system must also learn and change if the reforms are to be successful. Therefore, attention should be paid to enhancing the capacity of parents, the public, and community organizations and businesses to understand and participate in the reform efforts.

Chapter 1
Summary Review of the Literature

The first activity of this study, conducted in fall 1991, was a review of the extant literature on systemic reform. Because systemic reform was a relatively new concept in the field of education at that time, the identification of relevant literature extended beyond traditional bibliographic sources to the 25 CPRE affiliate organizations, the 25 members of the Policy Center Network, and a dozen states that were undertaking some aspect(s) of systemic reform at the time. Document reviews were supplemented by more than two dozen interviews with education researchers, state and federal policy makers, and staff of national education organizations. CPRE then commissioned four papers on issues raised in the literature review and the original study proposal, and by the project's advisory panel.

This chapter draws on the study's literature review (Levinson, 1992) and four commissioned papers (David, 1993; Gideonse, 1993; Little, 1993; Murray, 1992) to provide a definition of systemic reform that framed this study, and briefly discuss contrasting conceptions of education reform, issues in implementing systemic reform that had been raised in the early 1990s, and state and federal initiatives in systemic reform.

In addition, we drew on literature on teacher learning (e.g., Ball et al., 1994a; Ball and McDiarmid, 1990; and Cohen, McLaughlin and Talbert, 1993), professional communities (e.g., McLaughlin, 1993; and McLaughlin and Oberman, forthcoming) and school organization and change (e.g., Fullan, 1993; and Lawler and Mohrman, forthcoming) in developing a framework for thinking about capacity building and systemic reform. These and related literatures are taken up in our discussion of capacity and capacity building in Chapter 6.

What Is Systemic Reform?

One Conception of Systemic Reform

Systemic reform is a concept that has emerged in education policy over the last five years. As with most general concepts, it is defined and used in different ways by different people and in different contexts. And some engage in it without applying the label. As used in this study, and in developing approaches in a number of states, systemic reform embodies three integral components: (1) the promotion of ambitious student outcomes for all students; (2) alignment of policy approaches and the actions of various policy institutions to promote such outcomes; and (3) restructuring the governance system to support improved achievement.

This conceptualization is based on the writings of Smith and O'Day (1991), who argue that neither the top-down reforms nor their antithesis, the bottom-up reforms, of the 1980s will improve schools or learning. "Systemic barriers to educational change" (p. 236) exist in the form of a "fragmented, complex, multi-layered" (p. 237) system. Policy fragmentation is, in part, to blame for the low quality of the curriculum in most American schools because of the diffuse allocation of responsibility for goal setting, curriculum adoption (where goals are articulated), textbook adoption, and materials production and distribution. Furthermore, because of widely differing curriculum schemes, disjuncture exists between teacher knowledge and teaching practice as well as between content and assessment. What is needed is "a coherent systemic strategy" (p. 234) that takes advantage of the resources of each level of the education system, that adds content to the restructuring movement, and that establishes expectations that all students will acquire deep understanding of subject matter and complex thinking skills.

Smith and O'Day argue that state leadership can yield generalized, rather than merely piecemeal, improvement, that it can ensure broad equity, and, above all, that it can influence policies related to curriculum, materials, teacher preparation and development, and student assessment. States embarking on systemic reform must first agree on a core body of challenging and engaging knowledge, skills and problem-solving capacities as goals for all students. All state policies guiding instruction would than be based on these goals, forming a consistent, supportive policy structure for school improvement. State curriculum frameworks would set out the best thinking in the field about the knowledge, processes and skills students need to know in each core curriculum area. Instructional materials and high quality assessment systems would be tied to these frameworks. Preservice professional programs would shift from an emphasis on credit collection in subject areas to an emphasis on preparing teachers to teach the content expected of students, while inservice professional development opportunities would enable instructional staff to develop and refine their expertise in the content of the state frameworks and in effective pedagogical approaches. School-level personnel would develop specific curricula, programs and pedagogies designed to achieve the statewide goals. To do this job, schools must be given sufficient autonomy and resources to shape their programs to meet local conditions and the needs of their students.

Contrasting Concepts of Education Reform

Levinson (1992) contrasts this concept of systemic reform with the concepts of comprehensive reform, systemwide reform, restructuring, and instructional alignment—reform movements that share characteristics with systemic reform but that differ in critical ways.

Comprehensive Reform

The argument has been made that systemic reform is little different from the efforts that some states made to improve education in the last decade. In fact, many of the areas cited by Smith and O'Day—curricula, teacher certification requirements, and student testing—altered

significantly during the 1980s. Four factors, however, differentiate systemic reform from the earlier so-called comprehensive reform movement. First, and above all, the fundamental intention of systemic reform is to improve significantly achievement for all students, a factor not expressly articulated or emphasized previously. Second, while several states worked toward aligning curriculum with other policy areas, most states' actions were fragmentary and, in some cases, contradictory (Odden, 1991; Cohen and Spillane, 1993). Third, governance changes during this era largely centralized authority, rather than redistributing it across the decision-making levels. Finally, state reforms did not usually encompass a strong, sustained pre-service or in-service component, particularly not one linked with a state curriculum.

Systemwide Reform

Researchers, policy makers, and other advocates for systemic reform have broadened the definition to include other public systems in addition to education in order to benefit children and support their ability to learn. The National Governors' Association (NGA) (1991), for example, pointed to the role of adult education and wider social service delivery reform in improving school children's performance. More specifically, in a discussion of school-linked services, Kirst (n. d.) states, "A...complete definition of school-linked services is: a systemic change that enables parents to better consume and tailor public and private services to their special needs. The systemic change links schools and local public and private agencies to meet interrelated children's needs" (p. 1). Others urge the inclusion of school finance reform as an integral element in systemic reform, arguing that performance of all students will not improve until funding is equalized among school districts—and, perhaps, even relatively across states.

Restructuring

Because systemic reform embodies restructuring governance arrangements, many reformers tend to equate these two movements. Certainly, close correspondence exists. For instance, the National Governors' Association (1991) asserts that the two need not be differentiated and should, in fact, be merged: "State leaders recognize that restructuring is not piecemeal reform. It is systemic reform" (p. 1). David (1991) argues that restructuring differs from previous reform efforts in two key ways: "it is driven by a focus on student performance;...and it is a long-term commitment to fundamental, systemic change" (p. 11). The two terms are not synonymous, however. Many successful efforts to restructure have been accomplished without the involvement of the state (some might add, only without the involvement of or even despite the state). Furthermore, restructuring focuses on "altering authority and accountability systems" (M. Cohen, 1990, p. 251), running the risk of being content-free, whereas systemic reform begins with the need to revise what students should know and be able to do and bases subsequent changes on these expected skill and knowledge outcomes.

Instructional Alignment

The notion that curriculum and testing should be inter-related is not new. The quest for instructional alignment has existed since at least the 1970s (S. Cohen, 1987). What, then, is

new or different about Smith and O'Day's proposals for educational policy improvement? First, instructional alignment has tended to take a technical, behaviorist approach. Second, advocates of systemic reform call for performance-based assessments that can measure and, therefore, encourage a qualitatively higher level of skills than earlier tests, which although criterion-referenced, focused on the basics. Third, while the linkage between teaching and testing characterizes both movements, the earlier one ignored the necessity to prepare teachers in both instruction and testing as well as to alter authority relationships in order to improve student outcomes.

Selected Issues in Implementing Systemic Reform

Our review of the literature in the early 1990s uncovered a number of issues related to the successful implementation of systemic reform. Two which became the focus of our study were policy integration and teacher professional development.

Policy Integration

Systemic education reform requires unprecedented changes in the way we make policy in this country. These reform strategies require the forging of largely unprecedented consensus around learning outcomes, purposeful coordination by independent agencies and policy bodies within and across levels of the system, the implementation of multiple, aligned policy interventions, and a rethinking of traditional governance patterns. Many would argue that these strategies are impossible in a system deliberately designed to maximize variation and frustrate purposeful coordination (Cohen and Spillane, 1993). While other nations typically and purposefully tie the key systemic elements of instructional frameworks, instructional materials, assessment of student performance, and requirements for teacher education and licensure together,

> The decentralized organization of American education rendered the connections between policy and instruction inconsequential for most of our history....Similarly, American disdain for intellectually challenging education has left us with only modest evidence on how such education might turn out in this nation's schools (Cohen and Spillane, p. 37).

As a result, "our ingeniously fragmented political system is evident even in efforts to cure fragmentation" (p. 61).

Fuhrman (1993) argues that three other characteristics of the political system contribute to incoherent policymaking: the focus on elections, policy overload and specialization. The emphasis placed on campaigning and elections over policy or institutional improvement

goals has led legislators at the state, as well as federal, level to seek legislation with "name recognition," to circumvent controversial issues, and to favor policies with immediate effects and clear benefits over those with longer term and more remote benefits. At the same time, state policymakers are making policy on many more important education issues than in the past, forcing them to pay less attention to each aspect of policy. With increased complexity comes specialization in the legislative process. Specialization creates more arenas in which politicians can claim credit, but specialization contributes to the fragmentation of the system.

Others are concerned about the dangers of regulatory, centralized state control that they see as inherent in the systemic reform movement. Brooks (1991) worries about state-mandated curricula (he does not discuss frameworks and whether or not these are sufficiently different from state curricula to assuage concern) because they lead to mandates on how to teach as well as on what to teach. Similarly, Clune (1993), although agreeing with the basic premises of systemic reform, identifies four basic problems with a mandatory system of strong instructional guidance. First, standardized curriculum will not meet the needs of diverse local school systems and students. Second, attention to high standards may distract needed attention from the problems of delivering more effective instruction, especially in high need communities. Third, in the absence of a realistic delivery system, states will probably rely on high-stakes assessment systems to force instructional changes, yet high-stakes tests bring with them their own sets of problems and unintended consequences. Finally, adoption of a standard curriculum will prove to be impossible in our highly fragmented educational governance structure. He argues that the challenge in systemic reform is to "design policies that combine the high standards of systemic policy with a broad diversity of curricular options and a powerful delivery system" (p. 234).

Teacher Professional Development

Some researchers have drawn attention to the difficult extended learning required by recent instructional reforms (EEPA, 1990). Yet, most professional development strategies and programs do not adequately address the learning needs of teachers (Little, 1993).

The research that was available at the time of our study design indicated that state policies to guide instruction often falter on the issues of teacher knowledge and capacity. For example, one three-state study of the implementation of state curriculum frameworks, assessment and textbook policies in science found that, in addition to the alignment of these instruments, teacher preparation was a critical condition in influencing effects. The authors noted that "...the activity and the science-process focus of all three state frameworks presented a significant change for many districts and a clear need for training" (Armstrong et al., p. 19). Another three-state study that focuses on curriculum-related initiatives that encourage elementary school teachers to teach for understanding and thinking in five content areas found complex interactions between state and district policies. Important influences included the availability and expertise of local subject matter personnel for professional development programs. (Cantlon, Rushcamp and Freeman, 1991). In their study of the

implementation and effects of the then new California elementary school mathematics and science frameworks, Marsh and Odden (1991) found that a critical component of implementation were the efforts of the state and districts to train teachers in the substance of the frameworks. In her response to early studies of teacher response to new curriculum frameworks and related state policies, Darling-Hammond (1990) concluded that:

> If policymakers want to change teaching, they must pay attention to teacher knowledge. And if they are to attend to teacher knowledge, they must look beyond curriculum policies to those policies that control teacher education and certification, as well as ongoing professional development, supervision and evaluation. (p. 346)

Problems begin early in the preparation process. A basic problem, according to several authors, is that undergraduate prospective teachers do not know the content of the subject areas they are expecting and are expected to teach. Equally important, they do not comprehend the concepts and methods of their fields—the understandings that are necessary if they are to help their future students construct knowledge (McDiarmid, 1991; Cohen and Spillane, 1993). Feiman-Nemser and Parker (1990) investigated the extent to which these beginning teachers learn additional content or learn to value content through conversations with experienced, mentoring teachers once they start work. They conclude, "The probability that they will do so during their first year of teaching...is slim" (p. 13).

Even if prospective and beginning teachers were receiving adequate preparation in the content and methods of their teaching fields, however, this condition alone would not prepare them to be adequate teachers in a coherently organized school system. Teachers also need to be steeped in the content and the pedagogical underpinnings of their particular state's curriculum frameworks. A framework that is suffused with and conveys a central organizing principle demands teachers who are prepared in both the knowledge and pedagogy of both the subject-matter and the frameworks. Another key component of systemic reform in which teachers need extensive training is student assessment, particularly as performance-based approaches take hold. Yet a study of teacher preparation in assessment in six western states (Stiggins, 1988) concluded that incoming teachers are not prepared in any assessment techniques from small-scale daily grading to larger-scale alternative methods.

It is clear not only from these publications but also from the flurry of recommendations and efforts in the past several years that teacher preparation needs to change (see for example, The Holmes Group, 1986). The authors of papers commissioned for this study also identified problems with the existing teacher preparation and development system. Gideonse (1993) identified several obstacles in bringing the governance of teacher education into productive alignment with the press for system reform. These include (1) the fragmented structure for developing teacher education policy (e.g., establishing entrance qualifications, nature of the preparation program, exit standards, and teacher licensure), (2) the shared responsibility but diffused authority for the education of prospective teachers between school, colleges and departments of education (SCDEs) and schools of liberal arts and

education, (3) the lack of a consensus within the teacher education, teaching and policy communities on what we mean by teaching, teacher preparation or advancing the profession, (4) limited resources in teacher preparation programs and limited incentives for entering teaching, and (5) jaded views of past state regulatory effort. He argues that teacher education policy should rest on the meta-modeling of constructivist theory. Instead of prescribing the content of teacher preparation programs, policy makers, in close collaboration with the profession, should seek to define what constitutes professionalism in teaching and then encourage and support programs committed to professionalism, whatever their approach.

Murray (1992) reports on the work of a group of institutions of higher education who have pledged to reform the relationship between the faculties of SCDEs and liberal arts. The members of Project 30 are developing answers to five issues that bedevil any teacher education program: (1) How should teachers acquire a thorough knowledge of the discipline(s) they are licensed to teach? (2) What should the liberal arts component of the teacher education program deliver? (3) How do teacher education students learn to convert their knowledge of the subject matter into a teachable subject for a wide range of students? (4) How can we develop a curriculum that incorporates multicultural, international and other human perspectives? and (5) How can we increased the number of individuals from under-represented groups in the teaching force?

Little (1993) addresses the lack of a fit between the nature of the task of reform and the prevailing models of professional development—in particular, the dominance of a training paradigm built on "knowledge consumption," and the lesser support for an inquiry and problem-solving paradigm built around "knowledge production." Other issues in the design of professional development also center around the sheer complexity of the reform tasks being proposed, and the relative absence of tested principles, policies and practices together with the contradiction across policies and the propensity to seize upon early stage experiments as "models;" and the relative inattention to teachers' "opportunity to learn" within the salaried work day and work year. She offers six principles for professional development that would stand up to the complexity of current reforms and argues that teacher collaboratives and other networks, subject matter associations, school university collaborations targeted at school reform, and special institutes and centers are approaches that incorporate some of these principles. While Little views district-sponsored staff development and union-initiated projects as more problematic, they deserve policy attention because they are so central to teachers' lives and employment.

State and Federal Systemic Reform Initiatives

During the first half of the 1990s, policymakers at the state and federal level began to turn their attention to the results rather than the inputs of education. The National Science Foundation (NSF) has awarded Statewide Systemic Initiative (SSI) grants to 26 states "to

encourage improvements in science, mathematics, and engineering and technology education through comprehensive systemic changes in the education systems of the states" (National Science Foundation, n. d.). In order to be eligible, states must articulate their vision of curriculum goals and content, instructional strategies, student assessment, changes in school structure and decision-making, equity, and professional development of teachers and administrators—the key components of systemic reform. The Goals 2000: Educate America Act, enacted in 1994, provides resources to support state and local efforts toward systemic reforms. To receive additional funding, states must submit improvement plans that address the development and implementation of challenging academic and occupational skill standards and assessments, professional development for educators, and governance strategies and accountability mechanisms. The 1994 reauthorization of the Elementary and Secondary Education Act, now entitled the Improving America's Schools Act, goes further, requiring states to develop school improvement plans that establish high content and performance standards in at least mathematics and language arts, and assessments aligned with these content standards.

At the state level, over 30 states have begun to develop new curriculum frameworks in various subject areas, joining 15 other states that are already in the process of implementing them (Pechman and Laguarda, 1993). In 1991-92, 28 states reported they were implementing and 6 more were in the process of designing or piloting some form of alternative assessment (Pechman, 1992). Not surprisingly, the shape, content and mix of education policies differ across states. Some states, like California and South Carolina, have a long history of coordinated reform which has been well-institutionalized; they provide examples of trying to push along an established system. Kentucky, by contrast, embarked on perhaps the most far-reaching and comprehensive reform effort ever undertaken, without any prior base. The states also provide variation on the extent to which they are trying to drive the curricular system, and employ different primary mechanisms for doing so. Minnesota and Connecticut, for example, attempted to give local educators much latitude in devising curricular strategies to achieve common state curricular goals. Connecticut and Arizona planned to rely heavily on assessment instruments to guide the educational system, while South Carolina and Georgia focused first on, and gave primary emphasis to, curriculum frameworks (Fuhrman, Massell et al., 1992).

In their early analysis of state systemic reform efforts, Fuhrman, Massell et al. (1992) also posed questions and cautions for researchers and policymakers. Included among some of the issues are the following:

1. Will local districts and teachers have the capacity to develop rich curricular and instructional approaches to meet the knowledge, skills and behaviors that states have identified?

2. What effects do categorical programs have on states' systemic reform efforts? How will states design a coherent curriculum system which does not further disadvantage students who by law must receive much 'unaligned' curriculum?

3. How can states institutionalize systemic reform yet maintain the flexibility to renew these policies over time?

4. What is the political context of education policy making which hinders or facilitates systemic reform? Budgetary constraints, for instance, can not only slow the development of policy instruments, but can also fracture political coalitions which would otherwise provide solid ground for systemic reforms.

Another issue raised by Fuhrman, Massell and others is the timing and feasibility of radically different assessment systems. Many states are hinging many policies on new authentic assessments. Yet, many technical issues remained to be addressed (Koretz, Stecher and Diebert, 1992; McDonnell, 1994). Furthermore, as Maeroff (1991) notes, authentic assessments may not be viable instruments for broad state accountability purposes.

Chapter 2

Study Aims and Study Questions

The systemic reform literature summarized in the preceding chapter pointed to three areas meriting further study. First, we need to learn more about how states are changing the way they make policy as they adopt more systemic reform approaches. While the CPRE researchers have been studying state systemic reform activities in nine states through its "Core States" project (Fuhrman, Massell et al., 1992; Massell and Fuhrman, 1994), this study provides an opportunity to expand our understanding of how states design and implement systemic education reform policies and to examine strategies states have developed to overcome this structural fragmentation and political instability.

Second, we know little about how teachers, schools and school districts are responding to state systemic initiatives or about the impact of coherent state policies on what gets taught, how it is taught, what students are learning and on how student learning is assessed. This study is one of several currently looking at education reform at different levels of the educational system. Researchers at Michigan State University and the University of Michigan, for example, are examining how new instructional guidance policies are enacted at the school, classroom and/or student level in four states, paying particular attention to teachers of educationally disadvantaged students (Ball, et al., 1994a; 1994b; Jennings and Spillane, 1995; Spillane, 1994). The National Science Foundation's national evaluation of its Statewide Systemic Initiative will provide information on strategies that states, school districts and schools are using to reform mathematics and science education (Shields, Corcoran and Zucker, 1994; Zucker, et al., 1995). And CPRE's "Core States" study includes an examination of state and local relationships and local views of state reform in each of its states (Hertert, 1994). This study was designed to complement these other research activities by focusing on the response of reforming schools and school districts to state systemic initiatives, and on the factors that appear to support and/or hinder school and district-based reform activities.

Third, the research that was available at the time of the study design indicated that state policies to guide instruction often falter on the issues of teacher knowledge and capacity. Based on these findings, our preliminary research design focused on policies that linked K-12 instructional guidance and teacher pre-service and professional development policies. In a paper commissioned for this study, however, David (1993) argues that capacity-building in support of systemic reform goes well beyond the traditional teacher preparation and professional development activities in place today. "Systemic reform asks everyone in the education system to change their roles and relationships, not just teachers and students" (David, 1993, p. 2). Building the capacity to change teaching and learning means creating the opportunity for administrators, researchers and policymakers, as well as educators, to learn new ways of doing their jobs. Therefore, we expanded the focus of the study from

looking narrowly at teacher preparation and professional development to the broader issue of *capacity* to support systemic reform. The case study component of the project collected information on the needs for assistance at different levels of the system, strategies and activities developed to address these needs, and barriers to building capacity and areas of unmet needs.

We these issues in mind, our study had five general objectives:

- To expand the number and type of state approaches to systemic reform under study.

- To examine district, school and teacher response to state reform policies in a small number of reforming schools and school districts.

- To identify circumstances at the state, district, school and classroom levels that facilitate or inhibit the development and implementation of systemic reform

- To study the capacity of the educational system to support education reform.

- To provide guidance to policymakers at all levels of the education system as they design and implement more coherent education policies.

Research Questions

The following questions guided the collection and analysis of data in this study:

Elements of Systemic Reform

1. What are the characteristics of coherent systems of instructional guidance in elementary mathematics and language arts in three states undertaking systemic reform?

a. What policies do states include in their instructional guidance systems (e.g., curriculum, assessment/accountability, teacher policy, governance)?

b. Why have states chosen to include certain components and exclude others?

c. Are there gaps, conflicts, and misconceptions about state policies that would impede coherent state policy effects?

2. What is the scale and scope of state and local policies? To what extent do they reach all students, schools, school districts, and teachers?

3. What is the mix and balance of state policy instruments? How much reliance do states place on mandates? inducements? technical assistance? capacity-building?

4. What sources of information do policymakers use in constructing coherent approaches to state and local policy?

Implementation

1. What are district and school goals and priorities? What is the relationship of these goals and priorities to state education reforms in elementary mathematics and language arts?

2. How are teachers, schools and local school districts using state curriculum frameworks and assessments?

3. How have teachers changed their instructional practices and what influence over their practice do they attribute to state instructional guidance policies? What other factors drive their instructional practices?

4. What is the relationship between systemic reform, including instructional guidance and governance reforms, and the school context? How does the school context influence systemic reform strategies?

5. How, and to what extent, do federal policies facilitate or inhibit the implementation of systemic reform?

Capacity

1. What capacity do local school districts, schools and teachers need to implement education reforms in elementary mathematics and language arts?

2. What is the capacity of states, local school districts, schools and teachers to implement these reforms?

3. Who provides professional development to local districts, schools and teachers? To what extent do these programs meet the current needs?

4. What factors facilitate and inhibit the provision of sound professional development?

5. What lessons can state and local policymakers in other states learn from these experiences? What are the necessary conditions for the provision of professional development in support of systemic reform? What steps should be taken to facilitate the development and provision of these services?

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An Overview of the Study Methodology

Our study methodology is detailed in Volume III of this technical report.[1] In brief, we conducted case studies in three states that were undertaking significant systemic reform activities. Based on the findings of the literature review, the deliberations of the national conference and research on systemic reform conducted by CPRE and others on developments in the states under consideration, we chose to study California, Michigan and Vermont. Within each state, we drew a purposive sample of two school districts with reputations for active use of state reform[2] and the capacity to support education reform. In each study district, we then chose two schools, one at the elementary level and one at the middle school/junior high school level. Where the district had more than one school at these grade spans, we again chose schools with reputations for reform activities. Table 1 summarizes the characteristics of the school districts and states in our sample.

The focus of our study was on mathematics in grades K-8 across the three states and a second subject area, also in grades K-8, that was the focus of reform in each state—reading in Michigan, writing in Vermont and California. This approach enabled us to examine capacity-building in one subject (mathematics) that has been the subject of reform nationally, while examining a subject that has been of particular concern to each state. Within the K-8 grade span, we targeted instruction in grades 4 and 8.

Data Collection

In 1993-94, we conducted structured interviews with state policymakers, teacher educators and other providers of professional development, and district and school administrators in each of our sites. We asked state policymakers about the most recent changes in education reform, especially in mathematics and language arts, the capacity of the state, local school districts, schools and teachers to carry out the reforms, sources of support and professional development, and the state role in providing this support. At the local level, district and school administrative staff were asked about district goals and their relationship to state reform efforts, local curricula and assessment policies, perceptions of the capacity of their district, schools and teachers to implement state and local reforms, sources of support and professional development, and the state and local roles in providing this support.

We also interviewed five teachers in each of our twelve schools. In the elementary schools, we focused on teachers in grade four, but also included a teacher in grades three and five to capture curriculum and instruction in the grades "surrounding" the target grade. In

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[1] Volume III contains a more detailed description of the study methodology and copies of all of the interview protocols and teacher questionnaires.

[2] "Active use" entails anticipating state responses or doing more that the state requires. See Fuhrman, Clune and Elmore, 1988; Firestone, 1989; and Firestone et al., 1991.

middle or junior high schools, we targeted eighth grade teachers of mathematics and language arts, generally adding a seventh grade teacher in one of the subject areas. In place of classroom observations, which were beyond the financial scope of this study, we asked each teacher to complete a content coverage/instructional strategy questionnaire (in mathematics and reading or writing in the elementary grades; in their area of instruction in middle school grades).[3] The purpose of the interviews and questionnaires was to obtain information on teachers' instructional practices (specifically topic coverage and sequence, time allocated to these topics and instructional approaches they use for teaching the topics), how state and local policies affect content and instructional strategies in the classroom, the extent to which teachers have changed in their teaching, and reasons for these changes. We also asked teachers where they looked for support as they reformed their teaching of mathematics and language arts and their professional development opportunities and activities. Since we did not conduct classroom observations, our data are limited to *intended*, rather *actual* curriculum and instruction. That is, we identified what and how teachers *say* they teach, not what they actually do in the classroom.[4] However, our data collection enabled us to explore how teachers implement instructional guidance systems, and, as important for policymakers, what they view as problems with the policies and major barriers to implementation.

All respondents were guaranteed anonymity. We also agreed not to publish the names of the participating schools or school districts.

Data Analysis

This study used a qualitative case study methodology, supplemented by quantitative data analysis of the teacher questionnaires. Analysis of the qualitative data involved three stages. The first stage involved "within case" analysis for each school site and resulted in an unpublished case study for each school. The second stage entailed "cross-site" analyses across schools within a state, where the researcher compared and contrasted across school findings and analyzed state- and district-level data to generate state-level case studies. The state case studies, included in Volume II of this technical report, describe the components and characteristics of systemic reform and coordination among policies at the state and local level, and changes in teachers' instructional practices and the sources of these changes, and analyze the capacity to support systemic reform and factors facilitating and inhibiting reform and the capacity for reform. The third stage of analysis involved comparisons across the

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[3] The questionnaire component of the study was funded by the Carnegie Foundation as part of a CPRE study of professional development and systemic reform.

[4] We feel that we collected accurate information on teacher instructional practices using teacher interviews and a content coverage/instructional strategies questionnaire, rather than brief classroom observations. Porter (1993) found considerable agreement between teacher logs and self-reported questionnaire data, leading him to conclude that "teacher self-report through questionnaires seems a promising and less expensive alternative...for measuring opportunity to learn."

three states and focused on common challenges to implementing systemic reform (reported in Chapter 4) and issues related to capacity and capacity-building strategies and policies (Chapter 6).

Data from the teacher questionnaires were analyzed by subject area and grade level within each state and then across the three states. The questionnaires included questions drawn from three nationally-representative[5] and one purposive survey[6] of teachers, enabling us to relate the data from our small, purposive sample of teachers to national patterns. The analyses presented in Chapter 5 of this report describe the instructional practices reported by the teachers in our sample and compare these practices to state and national standards in mathematics and language arts, across states, and to data from the national surveys. We also analyzed teacher reports of what factors influenced their teaching, how much control they had over aspects of their school or classroom, and amount and generic sources of professional development activity. The small size and non-representative sample of teachers included in this study do not allow us to generalize about teachers' instructional behaviors within their schools or districts, or within or across the three states. The questionnaire data, however, taken together with the interview data, do provide insights into the connections among systemic reform policies, capacity building and instructional practice.

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[5] The National Education Longitudinal Study of 1988 First Follow-up [1990] Teacher Questionnaire, the Schools and Staffing Survey of 1990, and the NSF 1993 National Survey of Science and Mathematics Education—Mathematics Questionnaire.

[6] Porter et al., 1993.

Table 1
Characteristics of Study Sites

	Enrollment, 1993	Community Type	Racial/ethnic composition, 1992	% of students in poverty[1]
California	5,285,000		44% White; 36% Latino; 11% Asian; 9% African-American; (22% LEP)	26%
CA1	5-10,000	Suburban/rural	55% White; 39% Latino; (15% LEP)	
CA2	>50,000	Urban	14% White, 35% Asian; 20% Latino; 20% African-American (30% LEP)	30%
Michigan	1,613,700		78% White; 17% African-American; 2% Hispanic	18%
MI1	5000	Suburban	94% White	20%
MI2	3300	Suburban	Predominately White	
Vermont	105,000		98% White	24%
VT1	1,500	Rural	Nearly all White	
VT2	2,300	Rural	Nearly all White	

[1] Percent of students participating in the free and reduced school lunch program.

Chapter 3
State Profiles

This chapter profiles the three states included in our study of systemic reform. The profiles, which are drawn from case studies presented in Volume II of this report, provide a brief demographic and fiscal overview of each state, the state strategy for systemic reform, and key components of its systemic reform initiative. The case studies include more detailed information on state policies, and describe and analyze reform efforts in a small sample of reforming schools and school districts in each state. The findings and analyses presented in Chapters 4 through 7 are based on data reported in these three more comprehensive case studies.

California[2]

Demographic and Fiscal Overview

California educates over five million students, approximately one-ninth of the nation's public school students. With an enrollment growth of nearly 200,000 students a year, the student population in the state is expected to reach seven million by the end of the century. The cultural, linguistic and economic makeup of the student population is also the most diverse in the nation. California has been a "majority minority" system for a number of years, with non-Hispanic white students currently representing 44 percent of the total. Over a third of the state's students are Latino, and at just under 11 percent, California also has the largest proportion of Asian students in the country. Over 20 percent of the students are limited English proficient (LEP).

A continuing economic recession, coupled with state and local tax limitations, constrain California's fiscal ability to respond to the needs of its growing, and increasingly diverse, student population. Inflation-adjusted per pupil expenditures increased a mere 6 percent overall between 1984 and 1993 and have declined sharply since 1989-90. As a result, California now spends, on average, considerably less than the national average on education. Housing the growing numbers of students is itself a major challenge, and class sizes in the state are the second highest in the nation.

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[2] This report was prepared in early December 1994 and does not reflect changes since that time, such as the current review of the curriculum frameworks or specific proposals for a new state assessment.

State Strategy for Systemic Reform

California has taken a three-pronged approach to education reform. The first prong is a strategy of curricular reform that seeks to ensure that all students have access to a "rich and rigorous" core curriculum. The more specific articulation of that vision can mainly be found in two types of documents: the discipline-based curriculum frameworks and the broader grade-level reform documents that present a direction for the desired school-based changes at the elementary, middle, and high school levels.

The second prong of the strategy is the alignment of state policy components to support the realization of the overall vision in general, and the content of the curriculum frameworks in particular. These components include primarily the adoption of textbooks and other instructional materials, student assessment, teacher and administrator professional development, and teacher credentialing and re-service education.

Finally, the state has developed a number of strategies for supporting school-based change in the directions articulated in the frameworks and grade-level reform documents. Major programs and recent developments in each of these prongs are summarized below.

Mathematics and Language Arts Curriculum

California has released two reform-oriented curriculum frameworks in mathematics: one in 1985 and an updated version in 1992. Like the 1985 framework, the new version emphasizes the goal of developing students mathematical power. The 1992 framework, which was scheduled for adoption in 1994-95, emphasizes the goal of developing students mathematical power and advances the state of the art by focussing on developing a full instructional program. It organizes mathematical content into seven strands and encourages the use of extended investigations of mathematical problems and relationships. According to a state administrator, the framework is intended as a manifesto and guide for curriculum developers, not for teachers and the general public.

The integrated English Language Arts framework that came out in 1987 is still in use by the California Department of Education (CDE). Revision plans for the 1993-94 school year were abandoned because the Department's goals and objectives were seen as still being consistent with the 1987 framework. Instead, the CDE has decided to focus on areas of the existing framework that were insufficiently developed or were difficult for teachers to work with, and has provided supplementary monographs in these areas. For example, based on feedback from the schools, the CDE concluded that the framework gave inadequate attention to early literacy instruction, especially for children who do not come from literacy-rich environments prior to school. In addition, the emphasis on meaning and whole language instruction was misinterpreted by some to mean there should be no phonics instruction. New publications argue instead for a balanced approach.

Alignment of Other State Policy Components

Instructional Materials. California is a textbook adoption state. For grades kindergarten through eight, textbook monies from the state can be spent only on state-adopted textbooks. The state has used the textbook selection process as a vehicle for trying to align the content of instructional materials with the state's curricular frameworks. Yet, few mathematics texts are currently aligned with the 1985 mathematics framework. The state responded to this problem by developing mathematics "replacement units" that are intended to replace chapters in the traditional mathematics texts. The replacement units emphasize hands on learning and student exploration of mathematical concepts. The Department hopes that they will be able to move away from the replacement unit strategy by getting better text book submissions from the publishers this time.

Assessment. California has two major state level assessment efforts, the California Learning Assessment System (CLAS) and the California Assessment Collaborative (CAC). The goal of CLAS, a 26 million dollar effort, was to develop a state of the art assessment that reflected the content of the frameworks. Unlike its predecessor, the California Assessment Program (CAP), CLAS included extended answer tasks and allowed for individual, as well as school level scores. The full program was to include on demand and curriculum embedded (portfolio) assessment, and would attempt to include students previously excluded from state assessment by piloting a Spanish version of the test.

In September 1994, Governor Pete Wilson vetoed the funds for CLAS and eliminated the CDE funds to administer the program. There were several factors that seem to have led to the Governor's action. The CLAS test would not be able to provide individual level scores in the time frame desired by the Governor. The CDE experienced several problems related to test development and dissemination. There was a strong organized opposition from the religious right, and it was an election year.

The CAC is another state assessment effort, but it is not part of the CDE. The CAC is a collaboration of 29 projects in districts and schools statewide designed to develop performance based assessment tasks and to build capacity to use performance assessment to improve instructional practice.

Professional Development. California supports several professional development efforts linked to the systemic reform initiatives. Professional development opportunities emanate from several different sources including: local, legislated, independent, professional and higher education.

The *Subject Matter Projects (SMP)* have been identified as the major strategy for professional development of teachers in conjunction with state curricular reforms. The SMPs, which were developed about ten years ago and are modeled after the Bay Area Writing project, are an effort to expand the number of teachers knowledgeable about the curricular initiatives and to increase teacher leadership in the area of curriculum. There are currently 90 sites of the SMPs in 11 curriculum areas. Some regard the SMPs as a strategic

remedy for curricular problems, while to others they are just a quick fix. About 2 percent of the teachers in California have participated in an SMP; the projects are administered by the University of California (UC) in concurrence with California State University (CSU) and the Superintendent of Public Instruction.

SMPs are administered through summer institutes, which are generally 4-6 weeks long and provide an opportunity for teachers to work together in a specific content area. The projects, many of which incorporate teacher research and other research, give teachers experience in actually "doing" exercises in the subject areas and then offer time for reflection and development of instructional and curricular strategies and projects. The focus of these professional development activities is on content knowledge and pedagogy.

The SMPs provide follow up support to the teachers and districts through out the academic year. Follow up may come in the form of opportunities for leadership development through on going networks and project, or professional development assistance for the district. Assistance to districts allows the SMPs to have a broader impact and fees are used to support other SMP projects, including Saturday seminars and workshops on special projects.

SB 1882, which funds the SMPs, also provides 13 million dollars to districts for school level professional development. About one-third of the districts in the state receive the SB 1882 monies, which can not be given to schools that are part of the SIP program. Since the funds are allocated directly to the schools, the state has no control over how they are spent or if they are supporting programs related to current state reform efforts. The legislation also provides $3 million to establish regional consortia and resource agencies. These consortia have played an important role in training and coordinating teachers to score the CLAS test, an activity which in itself provided an important opportunity for professional development.

As a result of a study that found that support for new teachers made a difference in their performance, the quality of the curriculum, and teacher satisfaction, the legislature allocated $4 million for the *Beginning Teacher Support and Assessment Program (BTSAP)*. Due to the high costs associated with obtaining the desired results, only 2500 of the state's 10,000 new teachers each year are able to participate in the program. The Mentor Teacher Program, which gives mentors a stipend to develop mentor designed projects, is one way that districts support their new teachers. The program also provides an indirect professional development opportunity for the mentors, and can be a source of capacity building for all involved.

The *California School Leadership Academy (CSLA)*, a quasi-independent organization, provides curricular reform training for administrators. CSLA programs focus on developing instructional leadership congruent with state reform activities and has served 8000 to 9000 administrators, mostly principals. The CSLA also works with other state initiatives.

Teacher Credentialing. Teacher credentialing is another component of California's systemic reform. Half of the state's 20,000 new teachers come through state accredited teacher preparation programs; the other half are from out of state or come to teaching

through other routes. While the legislature is responsible for many of the changes in the credentialing system, they are highly influenced by recommendations from the Commission on Teacher Credentialing.

The Commission is an independent, professionally based body, and is not part of the CDE. Composed entirely of teachers, it has several areas of responsibility. Commission staff handle applications for credentials, prepare studies and reports for use by the Commission, handle misconduct and other disciplinary matters. The Commission is also involved in national efforts to develop teaching standards and professionalize the teaching force.

The Commission has undertaken a comprehensive review of the basic teaching credential requirements and standards. The Commission staff will be revisiting the standards that have developed incrementally since 1970, and reconsider them in total. The goal is to reunite content and pedagogical preparation of teachers. The standards being developed by the Commission are closely linked to the frameworks. While these standards will apply to new teachers that receive their accreditation through California programs, it will not affect the nearly 50 percent of new teachers that come into teaching through other routes. The tool used to assess these candidates is a special form of Praxis III, which requires the candidate to write about the content areas, and is considered to be "moving in the same direction" as the standards.

Support for School-based Change

The third prong of California's reform strategy are site-based strategies, many of which take the form of school networks. California supports three kinds of school networks: subject-specific initiatives, the SB1274 restructuring initiative, and grade level networks.

Subject-specific Initiatives. In mathematics, the main subject specific school network is Math Renaissance, a middle school initiative, funded by the National Science Foundation, which is now in its third year. Also in initial stages of development at the time of the interviews was a similar initiative in elementary school math. Last year, approximately one fourth of the California middle school (245 schools) were involved in Math Renaissance. The Department had hoped to increased the number to 400 this year but were actually expecting to fall short of that target, in part because it costs a school $3000 to join and many schools are unwilling to sponsor the necessary teacher time. In English Language Arts, the CDE has established a pilot network of schools focused on early literacy, called REACH. The goal of this network is "to have every child at or above grade level in reading in an integrated language arts program by the end of third grade—in English or in the child's home language." REACH is a school-wide literacy program that especially targets children below grade level and incorporates professional development and parental involvement. Network meetings are held three times per year.

SB 1274 Restructuring Initiative. SB 1274 is a state funded restructuring initiative passed in 1989 and funded in 1990. The first funding round provided planning grants to 212 schools in 1991 and 146 schools were funded for demonstration projects in 1992. SB 1274 is

designed as a leadership/ lighthouse project that will change unproductive habits embedded in the structure of school by using criteria that focus attention on student work and student learning. To facilitate this endeavor, Project participants and staff have developed a process (called the "Protocol") to initiate on-going, school-wide reflection on instruction and student learning. The results of this process then feed back into the restructuring efforts in the school. There is also a network among the participating schools, and school teams participate in 1274 annual conferences to share what they are learning.

Grade level networks. The principal school networking strategy is the grade level networks based on the visionary reform documents, *It's Elementary* (California Alliance for Elementary Education), *Caught in the Middle* (middle school network), and Second to None (high school network). The central idea of the grade level documents and the networks is to help schools pull together the various threads of reform into a coherent strategy at the school level. The middle school network came first, formed with foundation support after the publication of *Caught in the Middle*. The document provides a model for transforming middle schools, placing emphasis on the whole child and integrated instruction. Now in its third round, 400 of the 1400 middle schools in the state belong the initiative's regional partnerships. They have developed a trainer of trainer model, a bi-weekly fax newsletter, which provides both substance and news, and regional symposia. The California Alliance for Elementary Education follows a similar model. To join the Alliance as a full member, a school must agree with the set of principles embodied in *It's Elementary* and pay a membership fee equivalent to $1.00 per student enrolled in the school. The five principles and beliefs are: a strengthened curriculum; all students can learn; teachers as professionals; schools as caring communities; and measuring success. The focus is on instruction and curriculum; *It's Elementary* recommends that schools start with one content area (e.g. science) work on that for a few years and then move onto another.

School Improvement Program and Program Quality Review. The other main school-based efforts sponsored by the state involve the School Improvement Program (SIP) and Program Quality Review (PQR). SIP began twenty years ago with a focus on early childhood education; it then incorporated elementary, middle and high schools. In recent years the SIP program and the PQR have been influenced by developments in and lessons from SB 1274 as well. In SIP the program is centered on the Program Quality Review, which is a school self study process, supplemented with periodic outside review. Based on the review, schools draw up a concise improvement plan. The PQR has moved from a focus on what teachers do (instruction) to what students do (student work). In this respect, the effort parallels SB 1274. SIP is a district-based program and does not include networks. It is less intensive, less on-going, and because it is focused on subject areas, it is less comprehensive in scope than 1274.

State Reform and Capacity Building: Views from the State

Four themes regarding the nature of reform efforts in California emerged from the state interviews. The first is a consistency of vision. Respondents at the state level presented a very common picture of the goals and nature of the reform efforts. This consistency runs

through the frameworks and reform documents as well and rests on what has come to be referred to as a "constructivist" model of learning.

Second, reform is viewed as being primarily a *professional* endeavor. The frameworks, the SMPs, indeed most aspects of the reform have their roots in professionally-based efforts, like those of the Bay Area Writing Project, and there are strong links between the professional associations like the California Mathematics Council and the state reforms. The view of the teacher as a professional lies at the heart of the grade level networks, professional development and teacher credentialing policy as well.

A third theme was the increasing emphasis on student performance and the use of student work not only as a means for judging the student but also as a tool to improve instruction. This was evident in the revision of the PQR review and in the SB 1274 protocol discussed above as well as in the interviews.

Finally, many of the interviews stressed the need to develop "learning communities" for both students and adults. One manifestation of these communities were the SMPs, one goal of which is to provide a "professional home" for teachers. There was also discussion of the school as a community of learners and an increasing emphasis on school-based change.

Michigan

Demographic and Fiscal Overview

Michigan educates 1.6 million students in 561 socially, economically and geographically diverse school districts. Statewide, the student body is 78 percent White, 17 percent African-American and 2 percent Hispanic. Yet, while the Detroit Public Schools educate 170,000 students, who are mostly children of color, school districts in Northern Michigan and the Upper Peninsula (UP) serve predominately White, rurally-isolated communities.

Michigan is average on many measures—household income, student performance on national assessments (e.g., NAEP), and spending on education. These averages mask many disparities in the state. Minority students are concentrated in the state's largest cities. Their academic performance falls well below the national average for all students, and below the average for students of their own racial/ethnic group. Michigan passed a new school finance law in 1993 designed to moderate, although not close, large spending differences between wealthy suburban and poor rural and urban school districts.

The call for education reform in Michigan has been driven by its steady loss of high-paying manufacturing jobs, especially in the automotive industry. Financial support for

schools is linked to the economic cycles—remaining stagnant or declining in times of recession, and growing in times of economic recovery. The new funding system, which shifts most responsibility for revenue-raising to the state level, will be tied even more closely to changes in state income.

State Strategy for Systemic Reform

Michigan's education reform efforts can be categorized as "standards-driven" reform that has evolved from a set of minimum standards in reading and mathematics embodied in a low stakes assessment system to the specification of more ambitious standards embodied in a core curriculum and linked to student assessments, school and school district accountability and standards for professional development. Unlike California and Vermont, where recent reform efforts embody a vision and theory of reform developed and championed by their chief state school officers, Michigan's reform strategy is representative of those states that have taken a more incremental approach to reform.

An Incremental Path to Reform

There are three key factors that underlie Michigan's approach: (1) a push from the education profession to redirect content standards away from basic skills to standards that incorporate new directions in the teaching of mathematics, science and language arts; (2) a simultaneous push by the governor and legislature to make education policy more prescriptive and to make the education community more accountable for its actions; and (3) the historical use of organizations outside the state department of education to communicate and support reform efforts.

The relatively limited capacity of Michigan's Department of Education (MDE) has led that agency historically to turn to the state's professional education community for assistance in the design and implementation of state policy. This has enabled Michigan to keep its state standards current with the new directions in the teaching of reading, mathematics and science. Michigan's Essential Goals and Objectives in mathematics and reading were first developed in the 1970s as a set of minimum performance objectives for the state's assessment program, the Michigan Education Assessment Program (MEAP). The Essential Goals and Objectives have been updated periodically to reflect national changes in the teaching of reading and mathematics. The current reading objectives, adopted in 1986, were developed jointly with the Michigan Reading Association (MRA). The state objectives reflect the new vision of reading that was emerging from the professional community at that time, one that recognizes comprehension as the ultimate goal of reading and emphasizes the interactive, constructivist and dynamic nature of the reading process. The Essential Goals and Objectives in mathematics were revised in 1988, under contract with the Michigan Council of Teachers of Mathematics (MCTM). Several of the authors of these objectives were also involved at the time in the development of the NCTM standards at the national level, and the Michigan standards incorporate the NCTM standards. The reading and

mathematics standards are being reviewed and revised, with the involvement of MRA and MCTM, as the state develops curriculum frameworks and a new high school proficiency test.

While the education profession in Michigan plays a major role in defining the content of the state's standards and assessments, those outside the profession determine *which* policies (e.g., curriculum standards, assessment and/or accountability mechanisms) should drive education reform and in what direction. For two decades, Michigan used a low stakes assessment, based on the Essential Goals and Objectives, to communicate content standards and to encourage changes in local curriculum. This approach of "friendly persuasion" fit the state's strong tradition of local control, but did not produce the type of work force Michigan businesses needed. Responding to calls from the business community and the governor for a better-educated work force and greater accountability in education, the legislature enacted increasingly prescriptive laws, first calling for voluntary enactment of a state model core curriculum (PA 25 of 1990) and public reporting of test scores, and then requiring districts to develop a core curriculum in mathematics, science, social studies and communication arts by 1997 (PA 335 of 1993). The legislature also enacted a high stakes high school graduation test (1991).

The MDE has worked hard to link these different legislative initiatives together into a coherent reform. The Essential Goals and Objectives were the basis of the state model core curriculum in 1990, and the State Model Core Curriculum provided a foundation for the state's frameworks in mathematics and language arts. The frameworks, which were being developed at the time that PA 335 was passed, are viewed as an opportunity to update the state's mathematics and language arts standards. The state will use the standards developed under the state curriculum frameworks projects as the state core curriculum, and is in the process of adopting the standards. The relationship between these new standards and the state's assessment program, particularly the new high school proficiency tests, is less clear.

As it experiences downsizing in the face budget cuts initiated by a hostile governor, the Department has developed a strategy of using (and enhancing) a public and professional infrastructure to provide technical assistance for these education reforms. As discussed below, this infrastructure includes intermediate education units, like the state's Intermediate School Districts (ISDs) and regional math/science centers, professional organizations, like the MRA and MCTM, and privately-supported organizations, like the Michigan Partnership for a New Education.

Components of Systemic Reform

Curriculum. At the time of our study, the state's vision of reading and mathematics in education are encompassed in two documents: The State Board of Education's Model Core Curriculum Outcomes and the Michigan Essential Goals and Objectives. The Model Core Curriculum Outcomes were developed in response to PA 25, which requires the State Board of Education to develop a model core curriculum in nine areas and encourages districts to develop their own core curriculum based on this model. The Core Curriculum Outcomes include a set of broad student outcomes and a set of general curricular, instructional and

school improvement principles that include taking into consideration differences in a student's environment and experiences and building on students' existing cultural strengths. It then specifies a set of learner outcomes in nine curricular areas, including mathematics and language arts.

The Core Curriculum Outcomes were based in large part on the more detailed Essential Goals and Objectives described above. The Core Curriculum Outcomes for Language Arts currently define separate outcomes for reading, writing, listening, speaking and literature for three different clusters of grade levels. The language arts frameworks will integrate all the components of language arts into one English Language Arts curriculum framework written around ten content standards[3]. The Essential Goals and Objectives and Core Curriculum Outcomes in Mathematics are written to a framework of eight content standards and six process strands that mirror the NCTM standards. The mathematics frameworks project is designed to update the state's mathematics standards and provide a set of high school standards (9-12) which had been missing from the earlier documents. The draft framework contains 15 standards, grouped by six strands. Both the language arts and the mathematics frameworks recommend a set of benchmarks that demonstrate each content standard for three (mathematics) or four (language arts) non-grade specific levels.

Assessment. Michigan has had a state wide testing program in reading and mathematics, the MEAP, since 1970. The current MEAP mathematics assessment is consistent with, but not exactly aligned with, the NCTM standards. The current reading MEAP is based on the Essential Goals and Objectives adopted in 1986.

As of 1995-96 students will be required the pass the MEAP in reading, mathematics and science in order to receive a state endorsed diploma. In 1997 students will be required to pass a new tenth grade high school proficiency test to receive a state endorsed diploma. There is an assumption that the new proficiency test will replace the tenth grade MEAP. A number of issues remain unresolved about the proficiency tests, including the nature of the tests, insufficient development funding and fit with other state policies. There is also a new portfolio requirement evolving from 1991 legislation and then PA 335, which requires all school districts to start maintaining portfolios by 1994-95 for students in grades 8-12. The portfolios, which appear to be an expansion of the state's employability skills portfolio program, are to cover planning activities, academics, career preparation and personal recognition.

School Accreditation and Accountability. Michigan's main mechanisms for accountability are the annual report and accreditation provisions of PA 25 of 1990. The annual report requires local school boards to prepare and distribute annual education reports, which must include a status report on the school's improvement plan (SIP), student achievement data

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[3] These standards address meaning and communication, language, diversity and culture, voice, self-regulation and reflection, genre and craft of language, depth of understanding, ideas in action, inquiry and research and critical standards.

from tests chosen by the school, retention and dropout rates, descriptions of specialized schools, enrollment process, and data on parent participation in student-teacher conferences. Schools must also report on the status of their accreditation and their curriculum as it compares to the state's required curriculum.

The accreditation process encompasses specified areas of the school including purposes, staff, curriculum and facilities. As a result of the sheer volume of work entailed in the accreditation process, PA 335 called for a "summary" accreditation process, which will be designed by the MDE with input from public hearings and reviews by the SBE and the Senate and House committees responsible for education.

Teacher Certification. Michigan law currently requires all teachers to pass a basic skills and subject area test prior to certification. Teacher education students must pass the basic test prior to their student teaching, and the subject test prior to their certification. In addition to passing their assessments, the teacher education students must have an academic major and minor, and have the requisite course work for the subject area they are testing in. The teacher tests are consistent with the existing model core curriculums, but the teacher education program requirements, which are under the purview of a constitutionally independent higher education system, are currently not entirely consistent with the teacher certification tests.

Professional Development. The state plays a minimal role in teacher professional development. There are no specific state policies on professional development for reading or math, although PA 25 calls for school improvement plans to include plans for professional development. PA 335 made two major changes to the state role in professional development. First, funding was increased from less to $2 million to $10 million for fiscal year 1994-95. The funds will be allocated to schools and ISDs on a per pupil basis, and to the MDE to support state wide professional development initiatives. Schools must submit professional development plans in order to qualify for the funds and use of the funds must meet certain standards.

Building an Infrastructure of Reform

The MDE has had a history of collaborating with professional associations to develop standards, to disseminate information on new standards and curriculum, and to build capacity at the local level. Because of limited fiscal and personnel resources, however, the MDE has turned to intermediate service districts, professional organizations, teacher unions, and colleges and universities to provide professional development to teachers, schools and school districts. This strategy has intensified in the last few years, as state department resources continue to be cut.

Intermediate Service Districts (ISDs). ISDs are county level agencies which provide special services to the districts within their boundaries. In addition to providing special and vocational education, and gifted and talented programs, the state's PA 25 charged them with providing technical assistance with school improvement, achievement, data, core curriculum and accreditation. Yet, these increased responsibilities have not been matched with sufficient

state dollars. Because these entities are funded in part by their own tax levy, the capacity of the ISD to help districts is strongly related to the size of their tax base, and ISDs in more affluent areas are able to hire additional staff and provide more services. They do provide a structure, however, for districts to pool professional development dollars from sources like the Eisenhower program.

Mathematics and Science Centers. The Mathematics and Science Centers are regional units designed to provide accelerated learning experiences for secondary students and technical assistance for local school districts to improve their mathematics and science programs. Twenty Centers serve all but ten of the 88 counties in the state. The Centers are housed in local school districts or ISDs. There is considerable difference in the resources available to the centers (the size of the staff, scope of the program and quality of the facilities reflect the availability of private funds, such as Upjohn in Kalamazoo and Kellogg in Battle Creek, and local public funds) and the historical emphasis of the centers: accelerated programs versus professional development and technical assistance. A large increase in funding from the state legislature in 1994 should begin to equalize the level of services provided by the Centers. By law, the master plans of the Centers must support the reform vision of mathematics and science developed by the state's SSI program.

Professional Organizations. Professional organizations in Michigan have traditionally played a major role in the development, dissemination and training of teachers in reading and mathematics reform programs. The MRA and MCTM have been involved in curriculum, goals and objectives and assessment development. The Michigan Council of Teachers of English (MCTE) has also been involved in the development of the language arts frameworks project. The professional organizations also play an active role in disseminating information on the revised content objectives to their members and play a significant role in providing professional development to the state's mathematics and reading teachers.

Unions. The state's principal teacher's union, the Michigan Education Association (MEA), is also involved in providing professional development opportunities for their members. The MEA provides training in a broad range of areas including school improvement, special education and pre-service education. They also provide information about professional development and research in the areas of curriculum and teacher certification. The MEA has participated in the PA 25 training coalition aimed at helping members implement new requirements, training members of state curriculum development committees, and evaluating the core curriculum outcomes documents. The MEA provides site coaches for their professional development schools, called "pioneer schools"; these coaches help with strategy and intervention plans.

The Michigan Partnership for a New Education. The Partnership is a non-profit corporation established in 1990 as a collaboration among Michigan business, education and government. Housed at Michigan State University, it receives both state and private funding. The Partnership has four program units or components. The School and University Alliance focusses on the creation and maintenance of local innovation and preparation sites for

educators, also know as professional development schools (PDSs). The second component of the Partnership is the Business and Community Alliance which develops locally-based coalitions to support local innovation in the schools. The third component is the collaborative Leadership Center which develops a critical mass of leaders in education reform. The fourth component is the Educational Extension Service (EES) which provides schools with practical, research based knowledge. One of the EES's major efforts is the Frameworks Project, which, by working through the ISDs, helps schools rethink their curriculum in light of the state's core curriculum outcomes; and improve their curriculum, teaching and learning. The project has three phases: to support local districts in developing an "overarching curriculum framework," to help them apply the revised frameworks to their own core curricula, and to implement the new frameworks.

Vermont

Demographic and Fiscal Overview

Vermont is a small state, especially in population. Its small scale means both that actors in state education circles tend to know each other and that support from outside sources goes much farther than it would in a large state. Yet, its rural nature (two-thirds of the population lives in a small town or rural area) often isolates some schools from the larger towns and the state capital. Vermont's 105,000 students are spread across some 279 school districts with school boards. This school population is diverse in income and in special needs, but not in the standard categories of race and ethnicity. Across supervisory unions, the median percentage of children on free and reduced lunch was 24 percent, and the state has substantial areas of rural poverty.

Arguments for the state's education reforms often refer to the need to prepare Vermonters for different sorts of jobs. Jobs in the textile mills have long since moved south. The various land-based industries (marble quarrying, dairy farming, logging) offer little hope for economic growth. Tourism continues as a major economic base, but is sensitive to general economic conditions. Much is made of the possibilities for high-tech industries, which could be attracted by a well-educated work force. Despite these economic problems, the median household income of Vermont families is around the national average, and average education revenue per student is more than 20 percent above the national average. Funding for K-12 education has increased dramatically in Vermont over the past 15 years. Constant-dollar, per-pupil expenditures increased by about 50 percent in the decade between 1981 and 1991, then leveled off. Wide variations in spending across the 60 supervisory unions, however, is an extremely salient political issue, capturing most of the legislature's discussions of education.

State Strategy for Systemic Reform

The state strategy for systemic reform in Vermont is based on an overall theory of change and several activities that the Vermont Department of Education (VDE) uses to try to promote this theory—promoting a vision of change, engaging the public, defining standards and assessments, and building partnerships outside the VDE.

Theory of Change

Interviews with members of the State Department of Education, together with the actions they have taken over the past few years, suggest that they embrace a theory about change in the educational system in which the following elements are central: (1) change should be oriented toward results; (2) state policies should provide consistent, but general, guidelines; (3) widespread public support is important, both for setting general directions and for making local decisions; and (4) all interested groups should realize that change will take time and support.

Results orientation. A "results" orientation is evident in the policies established by the VDE. The Chief State School Officer (CSSO) emphasizes the use of Total Quality Management (TQM) principles as a guide for the department's activities. The expectation is that the results of education should be measured, and the results used as a basis for guiding operation. The CSSO first established an assessment program, in which the results of assessment are easy to understand and authentically represent overall goals, and a general statement of the goals of Vermont's education, published as the Common Core of Learning (CCL). The assessment program was authentically based, which emphasized the importance placed on the results of education; and produces an output that allows teachers and the public to consider whether these are the results that are desired. The emphasis on results has also manifested itself in the revision of the teacher certification policies and program approval. The old system emphasized process criteria, while the new system emphasizes the results that the person or the program achieved. Teacher education program approval now relies heavily on examination of portfolios compiled by students in the program, and the results of the program, rather than the process of accumulating experiences.

Consistent with this element of the theory of change, the VDE has reorganized 'n order to concentrate their efforts on promoting reform. They are attempting to increase effectiveness by increasing employees' skill levels. Facilitating reform is now the VDE's priority, and they try get out of doing things that do not support reform, even when that means losing some of their capacity in other areas.

As part of their effort to be results oriented, the VDE devotes a significant portion of time to describing the vision of reform. The CSSO and his team leaders travel extensively within the state speaking with groups and reminding them of the general orientation presented in the Common Core. They also communicate the importance of having the individual elements of reform work together, and hope that this will increase the number of people working on the reform effort.

State Policies as Consistent, General Guidelines. The VDE believes that change must be promoted by advocacy of a general direction for change, not by insisting on a specific curriculum or instructional approach. State policies need to allow latitude for local adaptation if change is to occur. In the area of curriculum, the frameworks are seen as a bridge between the national standards, the Common Core and what is going on at the local level. The state's activities are intended to guide local action while keeping efforts across the state moving in the same general direction. The issue of "alignment" is seen as critical, as change efforts should be aimed at achieving a common goal. The department needs to manage change so that competition among the efforts will not dilute the impact, but will all fit together.

Since a results orientation is of little value without some criteria by which to evaluate the results, the VDE sees one of its key roles as orchestrating the development of Vermont's educational standards and of the assessments tied to those standards. The importance of the Common Core and the frameworks is that they will provide information to the districts. The expectations will be clear and useful, the emphasis will be on the outcomes and not the process of reaching the outcomes. The role of the VDE will be to provide materials to facilitate the reaching of these goals.

Public Support. Vermont's theory of change also includes an emphasis on public support. Because education reform involves values and fiscal resources, the public must be engaged and involved in the process. The public also must be made aware of the seriousness of the problems facing education on the state. One member of the VDE felt that educators were reluctant to bring these problems to the public because they were then being blamed for the problems.

The strength of the public has been evident in the process of Vermont's reform effort so far: in shaping goals, reinventing schools for high performance, and defining the common core of learning. The VDE envisions public support as a force that can be used to pressure schools to perform at higher levels. The VDE is considering a school approval process that would call for rating schools. If the school didn't meet standards, it would be declared bankrupt. Some in the VDE believe that such a rating system would pressure districts to become more involved in professional development and capacity building.

The VDE uses a combination of public meetings and mass media to keep the need for change and the progress toward broadly accepted goals in the public eye. Broadly distributed publications are another technique used to engage the public. Each year the VDE puts together a report on "The Condition of Education," filled with graphs and tables, many of which are explicitly linked to the states goals for education. The VDE has also prepared inserts for the major newspapers. The VDE views this outreach as crucial, since reform efforts depend on public financial support or support for giving teachers time out of the classroom. The public must be engaged and feel that they are the ones calling for the changes.

Time and Support. The staff in the Vermont Department of Education stress that lasting, significant change requires time and support. Individuals at the school level do not have time for the reforms in mathematics and writing. They need time and additional support. At the district level and at the VDE, similar problems exist. Additional financial resources and encouragement from citizens helps, but even with such support, change takes time. Time is needed for professional development, to work on curriculum, to work with students, and to talk to other teachers, parents and community members. Often legislators and the public do not appreciate this need for sufficient time to develop and implement reform, and are impatient for change.

Time is also needed to build public understanding and support for the reform. The Common Core took 2.5 years to develop, a process which helped to build a general feeling of ownership among the participants. While it could have been written much more quickly by the VDE, there would not be the same broad based dedication that was realized as a result of the investment of time.

Components of Systemic Reform

Curriculum Frameworks. The Common Core of Learning is not organized around traditional subject areas. During 1993-94 three groups were at work on the frameworks that will provide a connection between the Common Core and the curriculum decisions that will be made at the local level. These frameworks will include content standards, and opportunity-to-learn standards. Consistent with the Common Core, each group includes multiple disciplines. The VDE worked to secure funding for the work of each group. Funding for the mathematics and science group came as part of NSF's Statewide Systemic Initiative (SSI). The stated goal is that these frameworks should provide guidance to local districts without being too prescriptive.

Assessment. Vermont has a relatively short history of state-wide assessment. Traditional multiple choice tests have been pushed aside for a performance based test, which the State Board of Education viewed as a means for improving instruction as well as accountability. The SBE gave the VDE five years to develop the program, but the VDE feels a strong press for accountability to the legislature and the school board after only three years.

In 1993-94, the assessment was carried out in mathematics and writing in grades 4 and 8. Each student puts work into a portfolio, which is scored by the classroom teacher using criteria established at the state level. A state-wide team then scores a selected group of the portfolios. The portfolio system has been described as a cutting edge attempt to develop an assessment system that is more in line with national curriculum reforms, on the other hand a series by RAND have documented the difficulties in achieving reliable scoring at the state level.

Teacher Education and Certification. In 1989 the State Board of Education created a State Professional Standards Board to set policy for teacher certification and relicensure, and for teacher education and program approval. A majority of the Standards Board members are

teachers, with the remaining members representing higher education and other interested groups. The major recent changes in teacher education program approval are a shift to portfolio-based program review and the addition of a requirement that teachers complete a disciplinary major as part of their teacher education program.

The new process for program approval is "results oriented" and based on portfolio review. Attention is paid to what students can do once they leave the program, rather than the fact that the program has been completed. The SBE has specified five general areas in which teachers must be prepared, but has not yet eliminated the old competency requirements. By 1995, individual teacher education students will have to prepare a portfolio for themselves, which will document how they have achieved the results expected by their program. The requirement that teachers have an academic major was legislated after the idea of requiring a master's degree was determined to be too expensive. There is some criticism from higher education that the requirement is for a thirty credit "major" in a subject field, (small m), rather than the completion of a traditional discipline-oriented "Major," such as English. Some groups are now working on the issue of interdisciplinary majors, which would be more in sync with the Common Core emphasis on curricular integration.

For teacher relicensure, the State Standards Board established a system in which teacher-majority local standards boards have been set up, to make relicensing decisions for teachers on a seven year cycle. The teacher-created, seven year plans must be approved by the local Board, and must include a plan and a portfolio of how the teacher proposes to improve his instruction during the cycle. Once approved, the plan is used when considering annual requests for professional development support such as tuition reimbursement or conference attendance support.

Accountability and Approval. There are presently 151 school approval standards, oriented towards resources and processes, rather than results. During the 1993-94 year members of the VDE were working on revising the school approval standards so that they would be more closely aligned with the state commitment to results as described in the Common Core.

Professional Development. The VDE does not use professional development as a formal strategy in their reform effort. The theory of state policies being used as general, consistent guidelines seems to be in force here. Members of the VDE do acknowledge, however, that time is needed for additional professional development.

Professional development at the state level results as a consequence of the other individual components of systemic reform. For example, the CSSO sees building partnerships as a form of professional development; it is an indirect way of getting teachers involved with developing the agenda. The VDE uses training for other aspects of their reform effort, like the state assessment, as opportunities for professional development. To inform teachers about the assessment process and to train them in the scoring rubrics, inservice sessions were held. For part of the teacher relicensure requirements, every teacher

will have to put together a plan for what they would like to do to improve their instruction over the next seven years. These plans would be used when evaluating requests for support for professional development. During the 1993-94 year the state legislature also considered bills that would have added professional development days to the school year, tied to reform efforts. Teachers would have received some additional pay for these days, as many as 20 in some proposals, but not the same rate as their regular pay. None of the bills were enacted.

Building Partnerships

The Vermont Department of Education recognizes that is has a limited capacity to carry out change. Like many SDEs throughout the country, it has had its staff reduced at the same time that it has been given more responsibilities by the legislature and SBE. In response, the CSSO and VDE have set out to build numerous partnerships in support of their reform effort. By developing partnerships with groups in the business community, the VDE has drawn this important sector into the education reform efforts. Business groups have been involved in defining goals, developing assessments and supporting the portfolios. Another important set of partnerships is with the other human service agencies, such as the Department of Human Services. Legislation (Act 230) also encourages similar partnerships at the community level.

The VDE is also building partnerships with other education groups in the state, encouraging them to view the reform of education as their own, and not something dictated by the VDE. Groups are able to identify reform needs and to act in those areas. The VDE facilitates this type of participation by assisting with grant writing, providing seed money for projects, like teacher networks, and by publicizing some of the efforts to reform Vermont schools. Some activities have also been oriented at building partnerships with higher education. A commission of the college presidents was established to revise the approaches for approving programs for teacher education. The VDE is also interested in having higher education take a more active role in research and technical assistance linked to state reforms.

Chapter 4

Challenges to Implementing Systemic Reform

In Chapter 3, we presented brief summaries of the strategies and major components of systemic reform in California, Michigan and Vermont. While the history and substance of reform differs across these three states, educators and policy makers face common challenges in implementing education reform. In this chapter, we use data collected from teachers, schools, school districts and the states to discuss the context of reform in the three states, to describe how our three states and our sample districts and schools are approaching reform, and to identify the challenges they face as they develop a vision of reform, struggle to align major policy components, restructure their governance structures and address issues of equity.

We open this chapter with two cautions. First, we remind the reader that our sample of districts and schools was purposive, drawn to capture the policies and practices of reforming schools and districts located in reforming states. On the one hand, this means we must be careful in generalizing our findings to other schools within each of our districts or to other districts within each of the three study states. On the other hand, to the extent that states, districts and schools with different fiscal, political and demographic characteristics face similar challenges in reforming their educational practices, we have reason to believe that what we are observing in our sample sites will have applications to other states and school districts.

Second, it is too early in this reform movement to assess the impact of any particular state, district and/or school strategy. Although California initiated some components of what has become known as "systemic reform" ten years ago, some linkages are incomplete (like professional development and assessment) or weakly specified (like pre-service education). Michigan and Vermont have been at their reforms for only four or five years. Vermont respondents noted that they spent the first 2 ½ years of their reform developing and reaching consensus on their Common Core, and have yet to expand their assessment program beyond mathematics and writing or into the high school. Their new teacher credentialing requirements do not go into effect until 1995. While California has a comprehensive set of curriculum frameworks, Michigan and Vermont are only in the process of developing these instruments.

Therefore, this is not a report of "what works" in systemic reform. Rather, it describes the approaches used by educators and policymakers as they undertake major reform efforts in diverse settings, the issues that confront them, and the strategies they have developed to address these challenges. Our findings also underscore the complexity of these reform activities. In Chapter 5, we describe the reported practices of a sample of teachers in our sites in relationship to these state and district policies and to the teachers' opportunities for

professional development. We explore the ways in which policymakers can use systemic tools to enhance teacher practice and build the capacity of their schools and school districts in Chapter 6.

The Context of Reform

Three major contextual factors help to explain the scope, substance and direction of the reform activities and challenges that reformers face in California, Michigan and Vermont: (1) national and professional trends in education reform; (2) the economic and political context of the state; and (3) the demographic and fiscal context of the state.

National and Professional Trends in Education

Education reform in these three states did not take place in a vacuum. Reforms in reading, writing and mathematics were linked to, and shaped by, broader national professional and political developments. All three states have focused on setting more rigorous academic standards for all children, and the content of these standards embody, and in some cases go beyond, those of national professional organizations, such as the National Council of Teachers of Mathematics (NCTM). Reformers in the three states are connected to the national reform movement, through direct involvement in their national professional associations (where some worked on the development of national standards in their fields), through participation in national reform projects (like New Standards, NASDC, and the Carnegie middle schools initiative), and/or through the strong national interest in ground-breaking state reform activities, such as Vermont's portfolio assessment. The chief state school officer in Vermont (Rick Mills) and the former chief state school officer in California (Bill Honig) are also well-connected in the national reform movement, and have played leading roles in their own organization (CCSSO), through speaking engagements throughout the country, and in other venues.

Economic and Political Context

While reforms in the three states were influenced by, and in turn influenced, the larger national movement, the impetus for reform and the reform strategies undertaken in these states reflect their different economic and political contexts.

The impetus for education reform differed between California and Michigan and Vermont, due in part to the timing of the reform efforts and the nature of the states' economies. California has long been a leader in education change. One of the first states in the country to address the educational needs of economically disadvantaged students and

students with special educational needs in the 1970s, the impetus for change in the 1980s came from a combination of factors: the state's increased role in education funding under the *Serrano* decision, new revenues for education generated by an expanding economy, and a perceived failure of the policies of the 1970s to stem declining student academic performance (Kirst and Yee, 1994). Systemic reform efforts in Michigan and Vermont emerged later in the decade and were driven largely by economic forces. Structural changes in Michigan's economy had reduced the number of high paying manufacturing jobs, especially in the automotive industry. The Vermont economy, based on agriculture and natural resources, was also in a state of decline, and tourism, a major economic activity, was sensitive to swings in the national economy. As a result, business leaders and policy makers in these states called for the creation of a better educated workforce that could compete in an international, post-industrial economy. To use the words of Vermont's chief state school officer, their choice was "high skills or low wages" (Mills, 1993).

Although the impetus for reform differed, the overall goal of reform was similar for all three states: to identify and establish more challenging academic standards for all students and to develop education policies that were aligned with and supported these standards. The reform strategies adopted by these states, however, reflect a different balance of state and local control over education policy. While all three states consider themselves local control states, the history of state involvement in education policy varies considerably. State policy makers in California, including the state department of education, have been proactive in education policy since the 1960s. Bill Honig was elected state superintendent in 1982 on a reform platform emphasizing a return to high academic standards, a comprehensive, statewide reform strategy and increased public support for education. The California legislature soon passed an omnibus reform bill that contained 65 components addressing issues ranging from graduation requirements to mentor teacher programs, but focused on establishing a rigorous academic core program for all students. These reforms were not mandated, but provided much needed resources to districts and schools that chose to participate (Kirst and Yee, 1994).

In Vermont, an aversion to state mandates led to a change strategy built around the development and promotion of consistent general guidelines, rather than the establishment of a specific curriculum or instructional approach. Because local curriculum is "sacred ground," the Vermont State Department of Education walks a tightrope between providing enough guidance to local school districts so they can improve their curriculum and instructional practices and not interfering with local practice. Thus state activities like the developing curriculum frameworks are viewed as a bridge between national standards, the state's general Common Core of Learning, and local actions. The commissioner of education and the state department of education also see alignment of state policies around the Common Core as critical for setting a clear direction for local school districts.

Michigan's reform strategy reflects a continual tension between the state's tradition of local control and the legislature's (and business community's) desire to be more prescriptive. In the early 1990s, the state moved from a long-standing system of statewide assessments

and assessment goals and objectives designed primarily to inform and guide local curriculum reform to a set of policies that linked student assessments, curriculum standards and student and school accountability more tightly together. The agenda for 1995, however, is to retreat from these more prescriptive policies, returning to the use of state assessments and standards as policy guides, rather than policy mandates.

Another important aspect of the political context in these three states is the often conflicting interests of legislators, governors and the education establishment. In Michigan, the state board of education, chief state school officer and state department of education have traditionally been weak actors in education policy in the state, and they are currently under attack (along with the rest of the education community in the state) by the Governor and the Republican-controlled legislature who have set the reform agenda. Educational policy making is also highly politicized in California, but until recently a partisan alignment of the Democratic state superintendent and legislature counterbalanced the Republican governors and the state board of education members they appointed. The departure of Honig—the architect of California's systemic reform—coupled with Republican gains in the state legislature in 1994 threaten the continuity of California's reform efforts. Mills, an appointee of the Vermont State Board of Education, has enjoyed the support of the governors and legislators of that state to date, but Mills himself says that he has had to make some "Faustian bargains" with the state legislature. In particular, the legislature wants a clearer picture of the results for student learning, something that has been impeded by difficulties with developing reliable scoring for the state's portfolio assessment. In the year of our study, the legislature was consumed with debates about school finance. Although willing to include some of the additional professional development days recommended by Mills in finance legislation, the legislature was unable to approve any reforms of school finance.

Demographic and Fiscal Context

While the states' economic and political contexts were key variables in shaping their education reforms, their demographic and fiscal characteristics will be critical determinants of the stability and success of reform. The three states in this study provide sharp demographic contrasts. California educates the most, and the most culturally diverse, students in the country. In addition to its racial/ethnic diversity (non-Hispanic white students represent 45 percent of the total), California has a large and growing number limited English proficient students. While the system grows at rapid rate—four percent a year—state education resources are shrinking. Two major challenges facing the state are housing the growing number of students and finding the personnel, instructional and support resources to educate the mushrooming LEP population.

Michigan typifies northern industrial states in the country, with a smaller percentage of minority students who are primarily African-American and who are concentrated in the state's declining cities. While the state is about average on a number of measures, including tested student performance and education spending, like California, there are large

achievement gaps between majority and minority students. In contrast, Vermont is small, rural and has a predominately White student body. [California adds twice as many students in one year—200,000—than Vermont has in its public schools.] Its racial and ethnic homogeneity does not extend, however, to income or special needs; the state has pockets of rural poverty. Education funding in Vermont has increased over the last 15 years, and the state now spends at about 120 percent of the national average.

Thus the three states face somewhat unique challenges in the years ahead. California, more than the other states in our study, must contend with rapid growth, growing numbers of students with special educational needs, and a faltering economy. While the student populations of Michigan and Vermont are more stable, these states must address entrenched racial/ethnic and socio-economic disparities within their borders. While educators must address issues of urban education in California and Michigan, Michigan shares with Vermont the challenges of reaching geographically-isolated populations.

Systemic Reform Policies

Advocates have suggested that systemic strategies for reform should encompass three key areas: a *unifying vision and goals* that provide a coherent direction/strategy for education reform throughout the system and that are applied to *all* students and schools; a *coherent system of state policy guidance* that promotes these ambitious student outcomes; and a *restructured governance system* that defines the responsibilities of the various levels of the system in order to ensure that change sought in content and outcomes of education are enacted in the classroom (Smith and O'Day, 1991). Each of our study states has addressed these three areas to varying degrees. In this section, we examine the strategies our sites used to develop a vision of reform, align relevant policies and support restructured governance systems, and the challenges they faced in implementing these strategies.

Developing a Reform Vision

All three states have a general vision of reform that calls for more challenging standards for all students. They differ however, in the substance of that vision and the way it which it is communicated to the public and educators in their state. Regardless of the substance of the vision, all three states have had to face educators, parents and a public who were not convinced of the need to change current practice.

The Vision of Reform

The vision of reform developed by the three states differs on the nature of the desired student outcomes, the disciplinary base of the standards, and the role of the teacher in reform.

In California and Michigan, student outcomes are based on content knowledge in specific disciplines, such as reading, writing, mathematics and science. The content and disciplinary focus of the newest standards build on previous state policies. California, for example, has had subject matter frameworks for many years. Under Honig's leadership, however, the frameworks were revised to reflect more challenging conceptions of the content and more up-to-date conceptions of teaching and learning. The frameworks have also been given more weight as the basis for state assessment, textbook adoptions and other forms of instructional guidance. Similarly, Michigan has defined essential goals and objectives in mathematics and reading since the early 1970s. The current standards have moved away from the basic skills focus of the 1970s and early 1980s to incorporate new directions in the teaching of mathematics and language arts. Both states have, or are developing, separate curriculum frameworks and assessments for each discipline.

Vermont, on the other hand, chose to define its initial set of student outcomes—*The Vermont Common Core of Learning* (1992)—in terms of 21 generic student skills. Students are expected, for example, to: "listen actively, for a variety of purposes;...ask meaningful questions;...develop a sense of unique worth and personal competence;...[and] learn by serving others, and know the rewards of giving one's energies for a larger good." This approach has allowed the state to stress the interdisciplinary aspects of the curriculum. The Common Core organizes these "vital results" under headings that apply across content areas, the writing of the content standards was organized into three multi-disciplinary teams (mathematics, science and technology, arts and humanities, and history and social sciences) and the writing portfolio assessment requires students to include writing for other content areas (e.g., science, social studies).

In Vermont and California, the vision of reform also casts teachers as professionals, with both the expertise and authority to direct the course of reform. This vision manifests itself in several ways. At a general level, the curriculum frameworks in place in California and in development in Vermont are cast as broad principles, with the expectation that teachers in local districts and schools should be the ones to work out details of scope and sequence. In Michigan, however, the approach has been much more to list the content to be taught at each grade level. More specifically, viewing the teacher as a professional is an explicit principle mentioned in California's reform documents, and lies at the heart of the grade level networks, professional development and emerging teacher credentialing policy. For example, the grade level reform documents and networks are designed to help schools pull together the various threads of reform into a coherent strategy at the school level, and the restructuring initiatives foster and support on-going, school-wide reflection on instruction and student learning. The local recertification boards established in Vermont are composed entirely of teachers, who must pass judgment on their colleagues' plans for their own professional development.

All of the districts in our sample had, or were in the process of, developing a set of student and/or content outcomes in mathematics and language arts. Although their visions varied in scope and depth, in all cases state reforms had influenced the substance of district

goals and objectives. The most fully specified vision was found in CA2, which had a history of curricular involvement, initiated in large part by the previous superintendent who had been a strong proponent of a common core curriculum based on the state frameworks. The priorities in that district included a major early literacy campaign, and mathematics improvement. In these and other curricular areas, primary attention was focused on improving the performance of the lowest-achieving students in the district. The two districts in Michigan had established broad student outcomes and were working at the school and district level to set more specific academic outcomes and objectives in several curricular areas and at different grade levels. Both districts had adopted the state's reading objectives and were developing mathematics objectives that reflected both the state core curriculum and the NCTM strands. The two Vermont districts were using the curriculum review process to establish a vision of what students should know and be able to do.

Leadership in Articulating the Reform Vision

The three states also differed in how their vision was articulated to teachers, school districts and the public. In California and Vermont, the chief state school officers (and their departments) communicated a consistent reform message that provided a common focal point around which to align multiple education policies. In Vermont, for example, the Common Core serves as the touchstone for education reform in the state. Mills and his staff travel the state promoting the importance of the Common Core orientation for the future of Vermont, and equally important, they try to help people at the local level see how the various reform activities fit together. In California, access for all students to a rich and rigorous core curriculum has been the center of that state's reform efforts. But beyond that, a "constructivist" model of learning pervades the words and actions of state education staff and the major education reform documents, like the frameworks and grade level documents. Then, as described in the preceding chapter, the two states aligned other education policies with these reform visions.

In contrast, the education reform agenda of Michigan, which was set by the governor and legislature, largely responds to the concerns of the business community which supports accountability and the concept of a centrally-defined core curriculum. Because state policymakers have focused on the process of reform (e.g., greater accountability measures for schools, school districts and student), rather than on the specific content of reform, Michigan lacks a clear and shared vision of reform, or a leader to promote a vision. Expectations of what students should know and be able to do are communicated indirectly through the state assessment system, and training sessions designed to familiarize teachers with the latest assessment items in the different disciplines. Because the assessments of different subjects are changed at different times, teachers do not receive a clear message about any common, underlying constructs, such as "constructivist learning," or a common set of skills or knowledge that all students should learn.

The Tension Between Current and Desired Practice

New ideas about what students should know and be able to do and about how students should be taught require the development of new curricula, instructional materials and

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assessments, and extensive teacher professional development. These new ideas also challenge the conceptions of student learning and teaching that all actors in the education system—students, parents, educators, policy makers and the public—hold dear. Even those who support the new directions of reform, such as many of our teacher respondents, expressed the need to balance old and new ways of teaching reading, writing and mathematics. (See Chapter 5.) Moreover, many are not sold on the need or desirability of changing the ways we currently educate our children.

In general, the public neither understands nor accepts the current reform agenda. A recent survey by the Public Agenda Foundation found that the education reform agenda is out of sync with the general public's top concerns about safe and orderly schools and effective teaching of the basics. Most respondents agreed that schools should set very clear guidelines on what students should learn and teachers should teach, and they support setting higher academic standards for students. But they are uncomfortable with using calculators to teach computation, teaching composition without teaching spelling and grammar, and grouping students of different abilities together. And only a bare majority of the public agrees with educators that multiple choice exams should be replaced with essays (Johnson and Immerwahr, 1994). In California, a failure of the professional community to build broad public support for its reform efforts left it unable to counter attacks by the religious right on the CLAS test.

Recognizing the importance of public support for his reform agenda, and a lack of public understanding of the need to reform the state's public education system, the Vermont Commissioner of Education made public engagement a major component of his reform strategy. This state's Common Core of Learning emerged from a two-year long interaction between the Vermont State Department of Education and the public, including 67 local meetings where Vermont citizens were asked to define what they thought were the most important education goals for the state. The SDE also involved the business community in goal definition and portfolio design. The SDE has continued its public engagement campaign through the wide and frequent dissemination of information about the condition of education in the state, explicitly linked to the state's goals for education. People generally agree that Mills is doing a lot to try to get out information on Vermont's education reforms, but opinions vary about the success of this effort. Although many people are aware that changes are being attempted, fewer are conversant with the specific curriculum changes being promoted. Support from the business community has been strong, but some local school board members remain cautious. There has not been, however, any strong, overt opposition to the education reforms, and they appear to be on track in Vermont.

Districts undertaking education reform also recognize the need to educate, involve and bring along their publics. In one of our study sites (MI2), the superintendent initiated his reform efforts with the creation of a district Visioning Committee composed of community members and district teachers and administrators. This group, which was initially charged with envisioning what schools should look like in the 21st century, has been retained as an oversight committee that reviews and responds to proposed plans for restructuring education

in the district. The committee serves as a major vehicle for community input, and its recommendations are rarely rejected by the elected local board of education. This process has enabled the district to make some controversial changes, such as freeing Monday afternoons for teacher professional development, detracking the high school curriculum, and implementing learner-centered classrooms.

Struggling for Policy Coherence

A major component of systemic reform is coordinating key state policies affecting teaching and learning—curriculum and curricular materials, preservice and inservice teaching training and assessment—with the state's reform vision and with each other. All three states in our study have taken major strides in developing a more coherent policy structure, but all faced four major challenges in this task: (1) meeting curricular challenges for systemic reform, 2) linking teacher professional development with reform activities, (3) aligning assessment with curriculum, and (4) maintaining political support for the reform efforts.

Curricular Challenges for Systemic Reform

Three issues emerged across our sites as respondents at both the state and local levels discussed challenges to developing and implementing curriculum aligned with the new visions of teaching and learning: (1) aligning curriculum across grade spans; (2) balancing disciplinary and interdisciplinary approaches to learning; and (3) implementing multiple curricular frameworks at the elementary level.

One issue that emerged in our interviews was the lack of curricular alignment across grade spans, particularly between elementary and secondary school. Although subject area reforms cover grades kindergarten through 12, and emphasize articulation across the grade levels, this coordination has been difficult to achieve, particularly with the high school. Two factors appear to have contributed to this situation. First, many of the reform efforts in language arts and mathematics have focused on elementary and middle school teachers. The structure and context of high school courses have been slow to change, causing a potential discontinuity between the middle and high school grades. Middle school language arts teachers in our study were concerned, for example, that students who are taught process writing will face more regimented instruction when they enter high school. In the words of one teacher:

> The high school wants to tell grades 6-8 what to do. Like teach a five paragraph theme. Thank you, no.... Seventh and eighth graders don't need that at this point. We want to create kids who like writing, know something about the writing process.

In Vermont, this disjuncture is aggravated by the required use of writing portfolios in the eighth grade, but none in the higher grades. Second, districts have typically developed

curriculum by grade span (e.g., primary, upper elementary, middle and high school). Each development effort involves only teachers in those grade spans, and often occurs in different years. Teachers have little or no knowledge of what is taught or tested at other levels.

Three of our districts (MI1, MI2, VT1) are addressing the lack of K-12 articulation within their curriculum by having district-wide task forces develop objectives, or performance indicators, for each grade or grade span in each core curricular area. In MI1, for example, mathematics objectives are being established for each of the NCTM strands over four grade spans, K-12. In one California district (CA1), the need for a similar task force has been discussed, but it has not materialized due to other pressing needs of the district.

This lack of curricular articulation extends into post secondary education. Although this was not a focus of this study and we interviewed no high school teachers, several respondents indicated a tension between the K-12 curricular reforms and the demands and expectations of state institutions of higher education. For example, one state leader in California commented:

> In California, 85 percent [of professors in higher education] pay no attention to K-12, and the ones who pay the most attention represent a traditional point of view. In mathematics, that means they champion algebraic manipulation skills for incoming freshmen on the belief that students should learn math as an abstract discipline first and then worry about real world applications later on (e.g., in college).

A second issue concerns the tension between presenting curriculum in a disciplinary or interdisciplinary structure. The schools in our study varied considerably in the extent to which they emphasized disciplinary versus interdisciplinary instruction. At one end of the continuum, several of the elementary schools (MI2, VT1 and VT2) taught reading, writing and mathematics as separate disciplines, although they were beginning to introduce writing into mathematics and other subject areas. At the other end was an elementary school (CA2) that was moving from a 50 percent project-based curriculum in 1993-94 to all project-based instruction this year. In this latter school, the students chose their projects, which are interdisciplinary and multi-age, and which culminate in a major product, judged by students and teachers against collectively established rubrics and standards. Teachers in this school designed the projects and the overall curriculum themselves. Two other elementary schools (MI1 and CA1) and most of the middle schools were incorporating interdisciplinary units, but on a smaller scale and/or less frequently.

In all of the schools that were using some form of project-based or thematic instruction, teachers discussed the tension between disciplinary and interdisciplinary approaches and goals. In the middle schools, the tension was often expressed in terms of the relative emphasis on (interdisciplinary) teams or families and (disciplinary) departments. Most of the middle schools in our study that have introduced teams or families have retained their department structure. Day-to-day planning is the purview of the families, while more long-

range curriculum development and professional development is carried out by the departments. Yet, in some of these schools, teachers feel cut off from their departments, and the content-based support that comes from their disciplinary colleagues, because there is no longer scheduled time for department meetings (their planning periods are now used for daily team meetings) and the team schedule doesn't allow teachers in different teams to have lunch together. In one middle school (CA1), departments were disbanded to allow for family meetings, but recently teachers are moving to pressure the administration to bring back departments to meet their own disciplinary needs and ensure curriculum articulation across grades. Another middle school mathematics department (MI1) addressed this problem by putting together a folder with teaching ideas for all department members to access.

A third and related issue, which was raised at the elementary level in California, was how to absorb and relate disciplinary frameworks in a state that issues a new or revised framework each year. The California SEA has addressed this issue by incorporating and communicating a consistent view of teaching and learning in each of the frameworks. Emphasis on constructivist teaching and the "thinking curriculum" is carried through other reform documents and activities, as well, like the grade level documents and elementary and middle school networks. *It's Elementary* recommends that schools start with one content area, work on that for a few years and then move over onto another. There are two rationales for this strategy. First, the consistency in approaches to teaching and learning among the frameworks will result in a spillover effect: changes in instruction in one content domain will be a catalyst to changes in another. Second, teachers and schools need more concentrated time to effectively understand, much less incorporate the framework in any single area.

In addition to state-initiated suggestions and strategies, schools have developed approaches of their own to deal with the annual introduction of new frameworks. While teachers agree that an advantage of the California frameworks is their common constructivist approach to teaching and learning, they also note that each has represented a substantial departure from previous practice in a given subject area. Each therefore requires teachers both to learn new disciplinary content and to incorporate new pedagogy into curriculum and instruction. One elementary school in this study (CA2) was addressing this problem by focussing on interdisciplinary projects (with particular emphasis on science); they are aided in this effort in part by the small size of the school and the stability and experience of the teachers. Another elementary school (CA1) had responded with a team effort in which the knowledge and ability of teachers could be pooled for the particular "family" of students.

Vermont is taking a different approach to resolving this tension by developing interdisciplinary state frameworks to guide local reform. The content standards under development in 1993-94 were planned as a single framework, with some general standards and some subject-specific content as well. (In the 1995 draft of these content standards, the four general categories from the Common Core are retained as content applicable to all subject areas. Additional content is specified for each combined area (e.g., mathematics, science, and technology), with further content for specific each specific subject (e.g.,

mathematics)). These content standards are intended to be a framework for local districts to use in developing their own curricular objectives.

Aligning Curriculum with Assessment

The three states in our study, like other states throughout the country, vary in the policy instrument that leads their systemic reform efforts. In California, the lead instrument has been curriculum frameworks, which set standards for student performance and drive and guide other policies, such as the adoption of textbooks and other instructional materials, student assessment, and teacher and administrator credentialing, pre-service education and professional development. In contrast, Michigan has historically used its state assessment program to define what students should know in that state. At first glance, Vermont seems similar to California in that the Common Core of Learning defines 21 desired student outcomes. However, these outcomes are generic in nature and are not organized around traditional subject areas, and more detailed frameworks are under development. Thus, the state assessment has become the lead policy instrument in that state for mathematics and writing.

Regardless of which policy instrument leads reform, the respondents in our three states are concerned about the degree to which assessments, which are designed to measure what students know and can do, are aligned with curriculum, which is what students are taught. If curriculum reform precedes assessment reform, teachers are unclear about whether they should teach the new curriculum or teach to the old test, which is often used as an accountability mechanism. The old test may also provide an inaccurate measure of student performance. On the other hand, if assessment precedes curriculum reform, teachers may be unclear about what they are expected to teach and how.

We found a disjuncture between curriculum and assessment in all three of the states we studied. California had addressed the problem by developing a state-of-the-art performance assessment system—CLAS—that was aligned to the state's curriculum frameworks. Respondents (both teachers and state administrators) generally welcomed CLAS as an assessment headed in the right direction because it tested the types of learning promoted by the instructional reforms. In some cases, CLAS was used as an effective professional development tool as well, enabling teachers to understand what student work consistent with the frameworks looks like and how such work might be assessed to improve instruction (see Chapter 6). However, technical difficulties and poor communication with teachers and the public undercut the legitimacy and acceptance of CLAS. After two years of use, the funding for the assessment system was vetoed by Governor Wilson in September 1994 for both political and technical reasons. The Governor's priorities for individual scores within the next one to two years may force the state to return to easily administered and scored multiple choice testing which would represent a move away from assessment aligned with the intent and substance of the frameworks.

In Michigan, respondents described the assessments in mathematics and reading as aligned with the state's Core Curriculum Objectives and with national reforms in the

teaching of these subjects. Because teachers are more familiar with the tests than with the state's written objectives, and because test results are reported to the public and used for school improvement planning, the state assessment program has had the impact of encouraging teachers to change the content of their instruction in these new directions. The tests continue to use a traditional multiple choice format, however, leading several of our teacher respondents to complain that, for example, the mathematics assessment still emphasizes getting the correct answer rather than focusing on the process students use to obtain the answer.

The situation in Vermont is more complex. The current portfolio assessment system is viewed as a cutting-edge attempt to assess outcomes that are in line with national curriculum reforms, and, as we discuss in a subsequent chapter of this report, to enhance teachers' instruction as well as measure student progress. The assessment program, however, focuses on knowledge of discrete *disciplines*, such as mathematics, while the state is in the process of developing *interdisciplinary* curriculum frameworks. Although the assessment program is relatively new, the State Department of Education plans to revise the assessments to match the emerging content and performance standards.

The lack of alignment between state curriculum and assessment policy is common across the country. A study of assessment practices in the 25 states participating in the National Science Foundation's Statewide Systemic Initiatives (SSI) program in mathematics and science found that only ten states reported having at least one state assessment in mathematics aligned with the more challenging curriculum *content* promoted by the SSI (and three of the ten are our study states). The *format* of the test in five of these ten states was primarily multiple choice, however (Laguarda, Breckenridge, and Hightower, 1994).

Even in states where state assessments are consistent with the general direction of curricular reform, such as portfolios in Vermont and CLAS in California, districts in our study still had to use commercial multiple choice tests, which are not closely matched to state goals and curricular frameworks to (e.g.,) identify students for the federally-funded Chapter 1/Title I programs. Respondents criticized this practice as sending mixed signals to teachers and students about what was important. One California educator spoke of this problem in his state.

> The CLAS test is project oriented. The kids need to know more than computation. It's a *demonstration* of skills rather than a bubble-in. I may be hypocritical, but we have the CLAS and then a week later have the CTBS. We're sending mixed messages to our kids because we tell them that the stuff on CLAS is what's really important and then we give them the CTBS. The CLAS test is a truer reflection of what the curriculum should be, but there are no individual scores, so it doesn't have a lot of credibility. The test is ahead of its time in math. It came out last year at the same time as the new framework.

Recent changes in Title I assessment requirements are designed to address this conflict.

Aligning Professional Development with Reform

The states have been moving more slowly to align professional development with their reform vision. Two of the three states in our study, Vermont and California, are reforming their teacher certification and recertification requirements. Changes in Vermont include the enactment of a "results-oriented" process for the approval of teacher preparation programs, focusing attention on what students can do once they leave the program, rather than the number of courses they have taken. By 1995, students must prepare a portfolio which documents how they have achieved the results expected by their college's program, but there are few linkages between the programs' outcomes and standards established in the Common Core. In addition, Vermont's new teacher relicensure policy requires teachers to construct a seven-year plan for improving their instruction as a condition of receiving local support for professional development as well as recertification. This policy has the potential to link teacher professional development activities more closely to curricular reforms, but it is too early to tell what criteria these boards will establish and how they are linked to other state policies.

The Commission on Teacher Credentialing in California, an independent, professionally-based body, is in the process of revising that state's basic teaching credential requirements and standards to bring them more in line with the frameworks. The changes include a new assessment (a variant of Praxis III) that requires the candidates to write about the content areas and demonstrate entry-level proficiency in several areas of pedagogy. Michigan still uses traditional basic skills and subject matter tests and course work requirements to screen candidates for certification to teach, although state respondents reported that the subject areas tests are consistent with Michigan's content standards in reading and mathematics.

The states also play a limited role in the design and financing of inservice programs generally, and in those linked to the new content standards in particular. Only California has incorporated professional development into its reform strategy, supporting several professional development efforts that are directly linked to the systemic reform efforts. Principal among these are the California Subject Matter Projects (CSMPs) and their associated teacher networks. Built generally on the model of the Bay Area Writing Project, the CSMPs now number over 90 sites in 11 subject areas. The CSMPs are administered by the University of California, in concurrence with the California State University and the Superintendent of Public Instruction, and the state provides about $100,000 to each project site.[4] The substance of the projects is generally aligned with the frameworks, although the

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[4] The main component of all of the CSMPs is summer institutes, which are generally four to six weeks in duration and which focus both on content knowledge and pedagogical content knowledge. Unlike workshops, however, they provide an opportunity for teachers to work with other teachers in a specific content area—doing math, doing writing—and then reflecting on and developing instructional and curricular strategies and projects. All SMPs have some form of follow-up through the year with teachers who have completed the summer institute. Many provide opportunities for leadership development through on-going networks and projects as well as through responding to requests from districts and schools for professional development assistance. Fees paid by the districts for these services help to support other project activities, such as free Saturday seminars and workshops on special topics.

centrality of the frameworks to the work of the projects differs somewhat by subject area. In addition, the state provides professional development money to districts through a variety of programs, including the mentor teacher and new teacher programs, the School Improvement Program (SIP), and SB 1882 grants for schools not eligible for SIP. Districts make differential use of these opportunities (for example many do not allocate the full eight days for staff development available through SIP), and the state has no data on the extent to which the local efforts are aligned with the frameworks. In addition, of course, districts have their own home-grown professional development programs, often (as for the two California districts in this study) tied to the framework and textbook adoption cycles.

Michigan and Vermont, on the other hand, do not directly fund professional development activities. Rather, they have chosen to broker and support services provided by outside organizations. In Michigan, the State Department of Education co-sponsors 17-part workshops on elementary and middle school mathematics instruction with the Michigan Council of Teachers of Mathematics (MCTM) and the intermediate school districts. In addition, the state provides small grants to school districts to purchase services from the state's traditional providers—professional organizations, unions, intermediate school districts (ISDs), colleges and universities, and commercial vendors—and funds regional, governmental structures outside the SEA, such as mathematics and science centers, to provide support to school districts and teachers. The Vermont state department of education writes grants for organizations outside the department to provide professional development, publishes catalogues of professional development activities and encourages universities to provide summer institutes for teachers.

The strategies used by Michigan and Vermont, however, raise the danger of not connecting the substance and format of professional development to the states' reform visions. In Michigan, for example, while many inservice programs are designed to help teachers teach to the state's content standards, they vary widely in coverage, scope and quality, and most are delivered in a traditional, one-shot workshop mode. They seem intended to enhance teachers' knowledge of the directions of the reform, but not to significantly strengthen their knowledge of the subject area or to develop pedagogical skills needed for major changes in practice. That state is taking two steps, however, to foster changes in the structure and quality of the professional development provided by outside providers. First, the NSF-sponsored Statewide Systemic Initiative has begun to work with the major providers of professional development in mathematics and science to educate them about alternative forms of professional development. Second, the State Board of Education is adopting a set of professional development standards to be used in reviewing and approving local district applications for state professional development funds, and for coordinating professional development funding and activities across the state department of education. The standards, which reflect current research on effective professional development and criteria published by the National Staff Development Council and the U.S. Department of Education, cover the context, process and content of professional development

Another challenge to linking pre- and inservice professional development of teachers to reform visions and to other education policies is the legal and traditional independence of higher education institutions. Our interviews with educators at both the elementary/secondary and postsecondary levels surfaced four issues about the linkage between higher education and K-12 systemic education reform—two related to the preparation and licensing of new teachers and two related to inservice programs.

First, to what extent should higher education be directed by K-12 systemic reform? In our three states, the state university systems are independent of other units of government. Thus, while state departments of education or separate boards of teacher certification license (and relicense) teachers and set teacher education program requirements, they cannot dictate the *content* of teacher preparation courses—this remains securely under the control of the university faculty. This split responsibility can lead to a discontinuity between state content goals for K-12 education and the university's goals for the education of its students. What is the responsibility of the university to redirect its goals? *Who* should determine what and how prospective teachers are taught? In light of higher education's independence, what strategies can policy makers use to persuade colleges and universities to change their course of action?

Second, state authorities and higher education institutions have overlapping roles in deciding which individuals are qualified to teach. Although the legal division of responsibility is clear (i.e., the state has the ultimate authority to decide on the certification of each individual), the overlaps in practice create tensions and confusions. In each state, a state agency sets the requirements for teacher certification, but as one requirement specifies that the candidate must successfully complete a program in a higher education institution (or other specially designated program, such as that run by the Los Angeles Unified School District). Thus the state gives higher education a role in the certification decision. The programs in higher education must, in turn, be approved by a state agency. State and college must reach agreements, periodically renegotiated, about what individuals must do before they will be allowed to teach. This need for agreement, complicated somewhat by the additional role of national organizations like NCATE, can be either an opportunity for state and college to collaborate on the improvement of education or a locus for disputes to emerge.

Third, questions arise about the degree to which higher education's role in teachers' continuing education should be directed by requests from LEAs. Should schools and districts expect higher education to provide assistance in whatever area and in whatever form they desire? Or should higher education faculty design offerings that best suit their expertise and that seem to them most important for the improvement of education? The patterns of requests and offerings in these states are a mixture of these models, with active speculation about which direction the relationship will move in the future.

Fourth, the tradition of faculty autonomy in higher education stands in tension to attempts to shape course content by centrally established policy. Professors we interviewed sometimes pointed out that they were not changing their courses in response to state

mandates, even when the changes they made were consistent with the directions of systemic reform. Faculty are committed to preserving academic freedom even as they are also concerned to promote educational reform. Analysis and formulation of policy will need to take these potentially conflicting aspirations into account.

Political Challenges to Coherence

The coherence and continuity of state reform efforts requires a stable political environment, which no longer exists in two of our states. In California, a partisan alignment of the Democratic legislature and state superintendent, Bill Honig, had counterbalanced potential opposition to reform from the Republican governors and the state board of education members they appointed. The departure of Honig—the architect of California's systemic reform—coupled with Republican gains in the state legislature in 1994, political attacks on the state assessment system, and the state's poor showing on the 1994 NAEP threaten to unravel California's reform efforts. The CLAS, a state-of-the-art assessment that reflected the content of the state's curricular frameworks, became an issue in the 1994 gubernatorial election. The winning candidate, Pete Wilson, vetoed the funds for the test, effectively killing the assessment which had generated vocal opposition from organized conservative forces in the state. It is not clear what kind of assessment will replace it. The state also decided recently to review and revise its language arts frameworks. While this decision may have been triggered by the poor student performance in the 1994 NAEP reading test, it represents the deepening politicalization of education strategies and proposals in the state.

In contrast, standards-based reform in Michigan has always had the support of a Republican legislature and Governor who have been responsive to business' concern about the quality of education in the state. The threat to education reform in this state comes from the Governor's current push for choice and charter schools and a corresponding repeal of the state education code. A new conservative majority on the elected State Board of Education supports this agenda and has spear-headed a rewriting of the school code that would deregulate most aspects of education, including teacher certification. It is not clear (1) how the proposed deregulation would affect the major components of Michigan's reform—the model core curriculum, the state assessment program, and the accreditation system, which are legislatively mandates, (2) how much support the Republican legislature and/or the business community will lend to the rewriting of the code, once the implications of the proposed deregulation become known, and (3) whether the Republicans will drop their ten-year commitment to state-determined student standards and a state assessment system tied to these standards.

Rick Mills, an appointee of the Vermont State Board of Education, has enjoyed the support of the governors and legislators of that state to date, but Mills himself says that he has had to make some "Faustian bargains" with the state legislature. In particular, the legislature wants a clearer picture of the results for student learning, something that has been impeded by difficulties with developing reliable scoring for the state's portfolio assessment. In the year of our study, the legislature was consumed with debates about school finance.

Although willing to include some of the additional professional development days recommended by Mills in finance legislation, the legislature was unable to approve any reforms of school finance.

Restructuring the Governance System

The third major component of systemic reform is a restructured governance system that defines the responsibilities of the various levels of the system to ensure that change is manifested in classroom practice. In this revised system, schools are responsible for developing an environment that is conducive to maximizing the achievement of their students and are given the authority to develop the instructional programs and pedagogies needed to achieve their goals. School districts are responsible for setting district goals and providing the necessary resources and other supports to their schools. This new division of responsibilities is a particular challenge in our fragmented educational system where multiple actors at different levels of the system—federal, state, local, school, classroom and home—are empowered to make multiple decisions concerning how children are educated.

Devolving Authority

It is clear looking across the 12 schools and six districts in our study that leadership and a culture committed to and supportive of change *at the school level* are major factors in facilitating education change. Commitment to change and instructional leadership at the *central office level* were also critical factors. Yet, state and local reform policies and strategies are less clear about the role(s) the district office and schools *should* play in building capacity and supporting teacher and school change. An unresolved issue that emerged from several of our sites was how to foster innovation and change at the school level, yet enable the district to facilitate change and spread these innovations across all of their schools. The nature and extent of this "top down," "bottom up" tension depends on a variety of factors, including the design of the state's strategies, how the district and its schools view the district's role in reform, and the stage and direction of reform efforts in the schools themselves.

The California reform strategy focuses on supporting teacher and school change through professional networks of individual teachers or administrators (e.g., the Subject Matter Projects, the California School Leadership Academy and professional organizations) and networks of schools (e.g., the grade level and restructuring networks). This approach leaves the district both literally and figuratively "caught in the middle." Many of the reform efforts either by-pass the district and go straight to the school or focus on a more manageable number of regions in the state. District and school respondents in this study complained that other than signing off on school applications (e.g., for restructuring grants), there was no clear role for the district in reform policy. These individuals noted that inattention to the district role has created resentment and tensions on both sides. On the one hand, the district respondents argue that without attention to and cooperation with the districts, resources can not be used in the most rational ways. For example, if districts cannot get the names of

teachers who have participated in the Subject Matter Projects (as was the case in CA2), they cannot incorporate those teachers into district staff development plans. Similarly, district participation in the grade level networks does not seem to be a state priority, which district respondents said weakens their ability to disseminate lessons from such efforts to other schools in their district.

On the other side of the equation, school respondents also noted tensions. In part these tensions may have been exacerbated by the nature of our California sample. The California schools in this study were all well along the road to restructuring their curricula and were seen, both by themselves and by their district leadership, as being well ahead of other schools in their area. It is not surprising, therefore, that when district administrators attempted to manage reform efforts district-wide, engendering more consistency and commonality, these schools reacted negatively. Our teacher respondents described such efforts as interfering with their own school-based reforms and criticized the central office for its inattention to their particular needs. Indeed, they seemed to view their district administration as more a hindrance to, rather than a facilitator of, change. There were, of course exceptions to this pattern. In CA2, for example, strong leadership from the district person overseeing mathematics and science efforts had resulted in consistent, coherent, and acknowledged assistance to schools in these areas, particularly in science (see Chapter 6). Among our respondents, however, such district-based support was the exception rather than the rule.

In contrast, the Michigan strategy gives a larger role to school districts. The state's accountability laws—PA 25 and PA 335—require school districts to develop and adopt core curricula outcomes based on state models, and to report annually to their publics on student achievement and progress on implementing its core curriculum. State grants to support curriculum development and restructuring activities were directed to districts, not schools. In the two districts in our study, PA 25 was a major impetus for district curricular reform and this reform was directed by the districts' superintendents and curriculum supervisors. Both districts received state grants to facilitate these activities. At the same time, both districts have recognized the need to decentralize authority to their schools in order to spark school-based and teacher-based reform activities and they are trying to restructure power relationships between the central office and the schools.

Yet, as they attempt to disengage from the schools, these districts haven't clarified what their new role should be either. Like their colleagues in California, they worry about how to manage and to "scale up" successful projects developed at the school level. Schools in the two Michigan districts have selected different areas of curriculum and instruction as their special areas of concentration. While each school attempts to utilize the best techniques and research available, they run the risk of developing in different directions, without a clear understanding of how the students will be affected as they progress through the district. At the same time, administrators feel that restrictions on the efforts of schools to innovate would not serve the students' interests and would be contrary to the district's position of allowing each school to direct its own development. In the words of one district administrator,

> We have to keep focused on the goal...The kids are not two years ahead [in math], that's ok as long as they are at [School A], but what happens when they go to [School B]? So other teachers are starting to say, "we need to be part of this." If we held the whole system until everyone was ready, then you would "dummy it down" until all you would get is mediocrity.

An administrator in the other Michigan district in our study noted,

> I would hope that we find a way to institutionalize some of the changes we found productive, a way to do them in other buildings so that all buildings have the same opportunity. I would like to see some of the curriculum changes become institutionalized if they are successful.

In Vermont, the state strategy, like California, focuses on supporting teacher and school change. But the central offices in our two study districts have also taken leadership roles in reform, and like our Michigan sites, devote a substantial part of one central office person to working on curriculum matters. These curriculum specialists serve as the intermediary both between local teachers and state efforts and between local teachers and national resources such as subject matter associations and textbook publishers. They work directly with teachers, attempting to inform and encourage interest in curriculum change. Perhaps because of this direct district-teacher connection, there was no talk about *who* should be responsible for leading reform efforts.

School Restructuring

California is the only one of our three study states to have initiated programs to promote restructuring at the school level. The goal of these programs is to make learning and change a part of the school organization on a daily basis so schools will support the new visions of teaching and learning presented in staff professional development programs. One program has funded 146 schools to restructure their schools through a process of on-going, school-wide reflection on instruction and student learning. The participating schools also participate in a network and annual conferences. The School Improvement Program and Program Quality Review involve a school self-study process, supplemented with periodic outside review. Based on these reviews, schools draw up concise improvement plans which are supposed to focus on student work.

Four of our districts, however, had restructuring initiatives focused at the district level (MI1 and MI2) or at the school level (CA1 and CA2). While the two Michigan districts took somewhat different approaches to restructuring, the vision of change is similar in both communities: it includes the empowerment of teachers and other stakeholders, the devolution of authority to schools for curricular/instructional and some professional development decisions, an emphasis on the use of research in making decisions at all levels of the system, and increased attention to higher standards for students and the development of learner-centered classrooms. Staff in these districts feel that their role, and the role of

principals should change from being purveyors of "top-down" policy to serving as leaders and facilitators in the new world order.

Our two California sites are involved in either the state's restructuring initiative or a "home grown" restructuring effort. All four schools in our California sample were restructuring. Three of the four schools were essential run by the teachers, and in all cases, the teachers reported that they were largely in control of the curricular and instructional decisions. They spoke of themselves as professionals and often participated in professional activities outside the school. The teachers also spoke of how structure allowed the opportunity for collaboration and reflection on their work, but in all four schools, indicated that the particular structure (form) needed to be determined by the instructional goals (content), not the other way around.

Four of the six middle schools in our study used block scheduling and electives to restructure their school day, creating daily common planning periods for staff in each team to meet to discuss students and coordinate instruction. Some of the schools (CA1, MI1, MI2) also restructured the school week—running longer on four days of the week and having a shorter instructional day on the fifth—to free one-half day a week for school-wide planning and professional development activities. Respondents in schools with restructured weeks indicated that these blocks of time were helpful but insufficient given the complexity of the changes they were being asked to make and competing demands on their time. Teachers in the Michigan districts, for example, raised two issues with their restructured week. First, this has become the only time for staff to meet during the week, so time is used for school administrative matters, as well as those issues more directly related to teaching and learning. Second, the half days do not provide teachers the opportunity to work two-on-two or in small groups on instructional issues and problems, or to do research and reflect on and discuss new instructional practices. At this point [and it is early in their reform], sessions are used for exposure to and exchange of information on strategies, but not for working through the strategies.

Bureaucratic Constraints to Reform

In addition to the broader organizational issue of devolution of authority and restructuring, some respondents identified constraints on school reform that arise from existing bureaucratic arrangements.

The first of these constraints is a district's control over professional development. One focus of reform efforts has been to link the selection and provision of teacher staff development more closely to school goals. While districts in our study support school reform tied to a careful evaluation of student and teacher needs, districts still control the quantity and type of district-funded professional development opportunities available to teachers. Our two Michigan districts, for example, use about half to two-thirds of the districts' professional development days for district topics. These sessions are intended to introduce teachers to new concepts, such as multiculturalism, inclusion, the district's new reading program, etc. But, it leaves little time or resources—generally two or three half days and/or $1000—for the

schools to pursue their specific reform agendas. A similar tension emerged in district CA1, where district-determined staff development also remains at the awareness level, and unrelated to the needs and specific goals of the restructuring schools. While CA2 has a more developed strategy for district staff development, the philosophical position of the former superintendent limited teacher access to state allowed non-instructional staff development days. While this superintendent agreed with the importance of professional development, he did not believe in decreasing instructional time to support it.

The role of unions is also critical in education reform, as many of the proposed reforms demand a greater, different, and more flexible definition of teachers' time and responsibilities. We saw a few instances where the teachers' unions in our sample districts put a damper on reform efforts. One of our Michigan districts successfully sought a state grant to extend its school year by 20 days. A requirement of the grant was that teachers engage in an additional 20 hours of professional development. The district sought to tie this staff development time to school improvement plans, but the union contract calls for teachers, not the district or school, to determine how to use this time. The union in this same district also successfully fought the mandated participation of teachers in Professional Development School projects in one of the elementary schools.

In the two California districts, the local unions were generally supportive of the reform efforts. In fact, in CA2 the union had taken the lead in building a district-wide restructuring initiative into the local contract. The union and district jointly employed and funded the staffing for the initiative and both participated equally in a broad oversight committee. Approximately one third of the schools in the district were participating in the initiative, which also promised some flexibility with regard to contract provisions plus on-going support of the union leadership. Nonetheless, teachers in this study reported that the contract did sometimes get in the way, particularly when it came to hiring new staff. This situation was exacerbated by fiscal problems in the district and state. Moreover, the district had recently "reconstituted" three schools, displacing staff and engendering some new tensions with the union leadership. In CA1, the union was supportive but not particularly active in the reforms. Its role was largely benign, except in cases where individual union members used the contract to thwart particular restructuring moves in their own schools.

Addressing Diverse Student Needs

A major goal of systemic reform is to improve the overall quality of schooling *for all children*, thereby raising the general level of achievement of all students while helping to reduce educational inequities. O'Day and Smith (1993) argue that

> A well-designed systemic reform strategy could provide an opportunity for extending reforms in challenging curriculum and instruction to all schools and all

> segments of the student population. Without a system wide strategy, curricular reform run the risk of simply "changing the rules of the game" while excluding from play poor and minority children in schools that lack the support and wherewithal to make the necessary but difficult changes in curriculum and instruction. (p. 253)

The need for a reform effort focused on all students is compelling, nationally as well as in the states in our study. After years of improvement, the achievement of minority children relative to their majority peers has become stagnant (Mullis et al., 1994). One out of every five children under the age of six lives in poverty (NCES, 1994). Poverty, coupled with the deterioration of families and social communities in the inner city, high rates of drug use and teenage pregnancy, and the growing social and economic isolation of poor and minority students from mainstream society, have created an "imperiled generation" of children (Carnegie Foundation for the Advancement of Teaching, 1988). Students come to school hungry and with limited literacy skills. Others bring the challenges of limited English proficiency or physical or mental disabilities.

The sites in our study have developed strategies at all levels of the system to address the needs of these children. These strategies include moving away from categorical program structures, targeting resources on low-performing and/or high minority schools and school districts and their staff, restructuring schools and restructuring curriculum.

Moving Away from Categorical Programs

The motto of Vermont's reform effort is "very high skills for every student: no exceptions, no excuses." In support of this vision of "no exceptions," in 1990 the Vermont legislature overhauled the way it funds and regulates services for students with special educational needs. The purpose of Act 230 is to increase the capacity of schools to develop comprehensive systems of education to help all children succeed, to the maximum extent possible, in the regular classroom. As one Vermont respondent noted, "Act 230 is an act to support instruction. It isn't a kid act. It says that teachers should be provided support to teach all children." The law requires all schools to develop instructional support systems to ensure the early identification of students at risk and to provide for the availability of services to meet their needs—without labeling or classification. The legislation allocates about 30 percent of the state's special education funds through a Mainstream Block Grant program on the basis of student enrollment, rather than on the number of students classified as needing special education services. These dollars can be used to hire core support staff who can work with all children rather than only those identified as needing special services. The Act also sets aside one percent of the state's special education budget for districts to train their administrators and regular classroom teachers in strategies for working with students with different learning styles.

Act 230 has had the intended impact of reducing the number of students classified in special education and increasing the number of students with special needs who are educated in the regular classroom. Overall, the teachers we interviewed did not see making accommodations for students with special educational needs as requiring much special effort, especially since these students might be accompanied to class by aides who would provide special assistance. It was difficult to tell just how much teachers adjusted their instruction or grading standards for special needs students. In one district (VT2), however, the curriculum specialist and special education coordinator have worked extensively with teachers at one school who are trying to incorporate ideas drawn from another mathematics curriculum they had been exploring into their new Chicago mathematics program. Vermont educators raised three issues about inclusion, however. First, respondents in both districts found the inclusion of students with emotional or behavior problems to be particularly difficult. Second, those in one of the districts were also concerned about the potential impact of budget cuts on the availability of necessary support services, such as paraprofessionals. Third, educators in that district told us they were also unclear about the type and amount of work special education students were expected to place in their portfolios.

Vermont hopes to expand the Act 230 model to programs that link education and social services. The approach here is to have community groups propose particular results, then be allowed to use funds across service areas to achieve these results. These efforts are still at an early stage of development, with interest expressed by a few communities.

Special education students in the two Michigan districts included in our study were also mainstreamed into general education classes. The districts use the same curriculum for all students, but provide extra support inside and outside the regular education classroom through special education teachers and para-professionals. The special education director in one of the districts noted that when her district switched to a whole language program, students with reading disabilities did not learn basic phonic skills and were pulled out of class for rote drill and practice. In mathematics, concrete concepts that are addressed by not practiced in the regular classroom are also addressed in a pull-out situation. In the other district, the special education director felt that classroom teachers were making some adjustments to meet the needs of students with disabilities, such as using more manipulatives to support the existing mathematics program. These administrators, like their counterparts in our Vermont districts, were concerned about having sufficient personnel resources and adequate teacher training to support special education students in the regular classroom.

Targeting Resources on Low-performing and/or High Minority Schools and School Districts and Their Staff

Both Michigan and California target some of their grant programs on schools and school districts with large concentrations of low-performing and/or high minority schools. The Michigan Statewide Systemic Initiative (MSSI) provides annual grants of up to $60,000 to eleven low-achieving, urban or extreme rural school districts to support district efforts to

reform their teaching of mathematics and science and to increase the participation of underrepresented groups (racial/ethnic minorities and/or women) in mathematics and science courses. [Neither of the Michigan districts included in this study are MSSI target districts.]

To encourage low-achieving districts to participate in the California Alliance for Elementary Education, Alliance organizers, in conjunction with the SEA's Chapter 1 staff, successfully targeted for recruitment 41 of the lowest performing schools in the Chapter 1 Program Improvement program. California Subject Matter Projects (CSMPs) are also paying particular attention to involving teachers from schools serving large numbers of minority and low income students and to preparing all participating teachers to meet the needs of diverse populations. The Literature, Writing, and Mathematics Projects have all held statewide or local summer institutes in Spanish. Several have targeted programs for teachers of limited English Proficient students, including those teachers who teach such students in English. The California Math Project has established an Equity Project in eight sites to explore issues of diversity and to bring issues of equity into the forefront in mathematics education. There have also been efforts to recruit minority teachers into the CSMPs. One mathematics site interviewed for this study reported that 25 percent to 40 percent of the teachers in the institutes are targeted minorities. The numbers are higher in the summer, but tend to drop off considerably in the networks. They are thus focussing on bringing more minority teachers into the ongoing networks as working to develop the leadership of those who do participate. They have also stepped up efforts to work with the Chapter 1 schools in the surrounding districts.

At the district level, MI2 chose to place its pilot Professional Development School is the elementary school with the highest concentration of poor children. CA2 contracted with the local University of California campus to provide professional development to teachers in middle schools targeted by the district's desegregation plan. Moreover, one of the overall priorities of this district is to see improved performance among students scoring in the lowest quartile on achievement assessments. For this reason, the district is targeting their efforts (particularly in the early literacy campaign) on Chapter 1 schools, schools with low reading scores, and schools with high proportions of LEP students. They have also established their own "district-grown" school improvement program.

Restructuring Schools to Promote Equity

Districts in our study also restructured some of their schools in an effort to be more responsive to the diverse social, cultural and educational needs of children schooled in these buildings. One of the California districts "reconstituted" a few schools several years ago as part of a desegregation plan in that district. The schools were closed and reopened with new teachers and students. Students apply to attend the schools, but selection is based purely on lottery, so all achievement and economic levels are presented and racial balance is maintained. Four of the six middle schools in our study had adopted, or were in the process of adopting, a middle school philosophy and structure which places emphasis on the whole

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child and integrated instruction. Students are assigned to a team of four teachers (in some cases the teams also include a special education teacher) who instruct, advise and monitor the academic and non-academic behaviors of their group of students. Academic grouping strategies also reflected new approaches. For example, both elementary schools in our California sample were using multi-age classrooms (1-3, 4-6), and middle schools in CA2 and MI2 had eliminated all tracking.

Curricular Responses to Equity Concerns

We also saw many examples of restructured curriculum in our sites. As discussed in an earlier section of this chapter, one of our elementary schools has developed a project-based curriculum. Projects offerings incorporate the AAAS Project 2061 benchmarks, the NCTM standards, and the California frameworks in English language arts and social studies. Another, which has a 65 percent Hispanic enrollment, has a two-way developmental Spanish bilingual strand and an English language development strand. Teachers in the four middle schools in our study had developed some interdisciplinary projects, but they generally lasted only two to three weeks.

The two districts in Michigan have moved away from the academic tracking of students. Classes in the elementary and middle schools are heterogeneously grouped. In an effort to encourage students to take more, and higher level mathematics courses, both districts have implemented transition mathematics programs, and District MI2 has eliminated remedial mathematics classes so it can give all students some exposure to algebra. This district's goal is to have all students complete algebra by the ninth grade.

Summary

The three states in our study are taking different approaches to systemic reform, reflecting variations in their demographic, economic and political contexts. Yet, educators and policymakers in these states face common challenges in implementing their reform agendas.

All three states have a general vision of reform that calls for more challenging standards for all students, but these visions differ on the nature of the desired student outcomes, the disciplinary base of the standards and the role of the teacher in reform. The states also differ in how their vision is articulated to teachers, school districts and the public, but all of the districts in our sample had, or were in the process of developing, outcomes in mathematics and language arts that reflect their state's reform vision. Yet, both professionals and the public are uncomfortable with giving up the old ways of teaching students how to read, write and do mathematics. Some state and local policy makers addressed these concerns through

concerted public outreach activities. In California, a failure to build broad public support for its reform efforts contributed to the demise of a major component of its systemic reform strategy—the CLAS assessment.

All three states have also taken major strides in developing a more coherent policy structure, but all face four major challenges in this task: (1) curricular challenges, including a lack of curriculum alignment across grade spans, a tension between presenting curriculum in a disciplinary or interdisciplinary structure, and implementing multiple curricular reforms at the elementary level; (2) aligning the curriculum taught and the assessments used to measure students' knowledge of that curriculum; (3) linking teacher preparation and professional development with other reform activities; and (4) creating the stable political environment necessary to nurture and maintain state reform efforts.

The third major component of systemic reform is a restructured governance system. The schools, districts and states in our sample were taking steps to devolve authority and restructure schools to foster innovation and education reform. We found that leadership and a culture committed to and supportive of change at both the school and district levels were major factors in facilitating educational change. Yet, several issues emerged in our sites. First, state and local reform policies and practices are not clear about the role(s) the district office and schools should play in building capacity and supporting teacher and school reform. Second, restructuring the school day and/or school week to free time for school planning and professional development activities is not always sufficient given the complexity of the changes teachers are being asked to make and competing demands on their time. Finally, bureaucratic constraints, such as continued district control over the use of professional development time, can constrain reform efforts at the school level.

Finally, a well-designed reform strategy must increase educational opportunities for *all* children. The sites in our study developed strategies at all levels of the system to address the needs of children who bring the challenges of poverty, limited English proficiency or disabilities to the school house door. These included moving away from categorical program structures, targeting resources on low-performing and/or high minority schools and school districts and their staff, restructuring schools and restructuring curriculum to promote equity.

How have these policy changes affected classroom practice? The next chapter describes the reported instructional practices of a sample of teachers in our sites, the factors they feel influence their instruction, and the kinds of learning opportunities available to them.

Chapter 5

Teachers' Practice and Opportunities to Learn

Introduction

The purpose of this chapter is to characterize teachers' practice in relationship to policy messages and opportunities for professional development. We look first at reported practice, making comparisons to the curricular guidance offered in state and national reforms, and to evidence about teacher practice drawn from other studies. What we see are general patterns of emphasis that incorporate new directions in both state and national reforms, but also retain attention to more traditional topic areas.

To get some sense of why teachers have chosen the patterns of practice they report, we examine responses to questions we asked about influences on practice and on the degree to which teachers felt they had a say in making curricular decisions in their school and classroom. There we see that teachers do believe that they have been influenced by state policy instruments such as assessments and curricular frameworks, but that these state influences are by no means the only influences on practice, or even the most important influences. Teachers report that their own knowledge and beliefs about the subject matter and their students, for example, generally have a larger influence than state policies. Some of the interview responses suggest that teacher knowledge and beliefs are in turn influenced by national educational movements and by teachers' involvement in capacity building activities.

Given that possible connection, it important to consider what opportunities for further learning are available to these teachers. We conclude the chapter with an analysis of teachers' reports on where they go for further information and what sorts of learning activities they have recently undertaken. We see that, in comparison to a representative national sample, many more of these teachers have opportunities for inservice activities. We illustrate this participation in capacity building with examples taken from our interview data.

Our study was designed to examine local practices and perceptions in districts with a reputation for active involvement in state education reform. Activity in such "reform districts" indicates the role state systemic reform plays in districts thought to be at the forefront of change. These districts are, in a sense, success stories. By looking at such reform districts, and similarly selected schools within these districts, we get a better sense of how those moving in directions consistent with systemic reform see the contributions of state policy to their attempts to build local capacity and improve student learning.

To characterize activity and perceptions in these reform districts, we supplement interview data with responses on a survey given to each of the classroom teachers we interviewed. The surveys were intended to complement the teacher interviews, giving information that could be followed up in the interview, complementing general responses in the interviews with specific questions, and making some inquiries in standard formats that would ease comparisons between our sample and other studies examining practice, policy, or capacity building. (For the most part, these other studies focused on mathematics, rather than on language arts.) Some questions on our survey were, for example, modeled on questions used in nationally representative surveys such as the National Education Longitudinal Study. This comparison is especially useful, because it allows interpretations in comparison to responses by a more representative group of teachers.

The studies that we use for comparison are: National Education Longitudinal Study of 1988 First Follow-up [1990] Teacher Questionnaire (NELS88F1), the Schools and Staffing Survey 1990-91 (SASS), the NSF 1993 National Survey of Science and Mathematics Education--Mathematics Questionnaire (NSF93MQ), the School-Based Management Project (SBMP), and Reform Up Close (RUC).

- NELS88F1 surveys the teachers of students who were 8th graders in 1988, so were typically 10th graders in 1990, the year of this survey. This is a large sample (around 25,000 students), selected to be nationally representative of students in this cohort. The items we adapted were from the mathematics version of the teacher questionnaire.

- SASS is an integrated survey of public and private schools, school districts, principals, and teachers, concerning school work force and teacher supply and demand. It is designed to be nationally representative, with a large sample of elementary (about 16,854) and secondary (29,851) teachers. For comparison to our elementary school sample (mostly 4th-grade teachers), we used the 15,320 SASS responses from teachers in elementary schools who did not teach departmentalized subjects. For comparison to our middle school mathematics sample (primarily 8th-grade teachers), we used responses from high school teachers whose major teaching subject was either general mathematics or elementary algebra (a total of 2,017 teachers). For comparison to our middle school language arts sample, we used responses from high school English teachers, whose major teaching subject was in areas such as reading and literature (a total of 4,695 teachers).

- NSF93MQ is a national representative survey (6,000 teachers within 1,250 schools). For comparison to our elementary school sample, we used responses from teachers whose grade level was categorized as 1-4 (about 100 teachers). For comparison to our middle school mathematics sample, with used responses from teachers whose grade level was categorized as 5-8 (also about 100 teachers). Items concerning instructional content and organization, and perception of influence were adapted for our survey.

• RUC is a study of secondary school (grade 9 through 12) mathematics and science in six states, 12 districts, and 18 schools, with a special focus on influences on the content of instruction. Although the higher grade level does not make content comparisons to our survey possible, it is informative to examine what teachers in this study reported about the influences of factors such as state assessment and state objectives on their instruction. Sample size for secondary school mathematics teachers was about 160.

• SBMP samples both high school and elementary levels, with a major focus on the link between school governance and "innovative" practice. Teachers' responses were collected from seven states and from Australia. About sixty-five elementary mathematics teachers are selected for our comparisons. Given that our objectives are to investigate teacher capacity, it is informative to examine the time that mathematics teachers spent on various topics in mathematics instruction.

Reported Practice

Systemic reform stresses coherence among policies, with the hope that coordinated policies will lead to classroom practices that are in line with state curricular goals. Our study used both interviews and survey items to assess the degree to which teacher reports on their instruction were consistent with curriculum recommendations explicit or implicit in policies such as curriculum frameworks and state assessments.

In our interviews, teachers in these reforming districts described themselves as being in line with the general directions of reform in mathematics and writing. Comparisons of their questionnaire responses to national studies and to a study done more that a decade earlier in Michigan support the claim that classroom practice in these districts has moved in reform directions. As found in earlier studies of policy influences on school curriculum, teachers seemed more inclined to add new content and objectives than to abandon topics that receive little emphasis on recent reforms.

Although instruction in these reform districts seems roughly consistent with state curriculum goals, similarities between some state goals and national goals mean that teachers may be attending to national trends rather than the state policy instruments, however coherent those state policies may be. We examine the match between reported practice and these general directions first in mathematics, then in language arts.

Teachers' Reports About Instructional Practice: Mathematics

Consistent with national discussions, the mathematics systemic reform efforts in each of our three states resembled the NCTM standards in many respects. In particular, state policies generally encouraged a shift from a dominant emphasis on computation and memorization of algorithms to greater emphasis on measurement, geometry, statistics and probability, problem solving, and communication about mathematics. They may also suggest changes in the organization of mathematics instruction, especially in a shift from virtually exclusive reliance on a mixture of whole group and individual work to an instructional model that makes more use of students working in small groups, with or without continual guidance from the teacher.

On our surveys, the teachers reported on the amount of time they devoted to various ways of organizing mathematics instruction and on the time devoted to various topics in mathematics. By looking at the responses to these survey items, we are able to check whether teachers' general reports about their views of state policies are reflected in their instructional practice. Does their sense about the significance of portfolio assessment, for example, correspond with the content they choose to teach?

We must, of course, be careful not to assume that correspondence between instructional practice and policy directions show a policy *effect*. Such a correspondence might be due to teachers' responses to information about national trends as reported in practitioner journals or at professional meetings, or might indicate that national policy directions were influenced by the practice or goals of classroom teachers like these. However, these reports on practice can be combined with teachers' responses—in our interviews and in other parts of the survey—about the influence of various factors to get some sense of the role played by policy instruments and other sources of influence and information.

To get a better sense of the particular guidance teachers might perceive in each state's components of systemic reform, we sketch the broad outlines of content emphases for each state and examine teachers' reports of their practice for each state, gaining an impression of the correspondence (or lack thereof) between policy and practice for teachers in these particular schools. We then examine differences among states, both in the reported practice and in the specific direction of curriculum policy in mathematics.

Because few studies of teacher's content selections were completed before the current wave of reform, inferences about *change* in practice must rest on anecdotal information and on studies that overlap with our focal grade states and grade levels. Working in Michigan, Porter and his colleagues (see references in Porter, 1989) conducted the most systematic studies of mathematics content taught in the upper elementary grades. They found that fourth grade teachers spent more than 80 percent of their time on skills, primarily whole number computation and arithmetic facts. They spent less than 10 percent of their time on problem solving. Moreover, Porter notes that the latter figure is an overestimate of time spent on what reforms advocate, because it included story problems where the operation to use was obvious

from the instructional context, as well as situations where students had to figure out what mathematical operations were needed to solve a problem. These figures are consistent with anecdotal reports that school mathematics in the 1980's concentrated on speed and accuracy of computation with whole numbers and on computation with fractions, decimals and ratios.

California

As reported earlier, California uses a set of state curriculum frameworks to define and communicate the intended content for each subject area. In mathematics, the most recent curriculum framework (Mathematics Framework for California Public Schools, 1992) is organized around strands of: number; measurement; geometry; functions; statistics and probability; logic and language; algebra; and discrete mathematics. The framework stresses the development of mathematical power, which includes communication, mathematical ideas, mathematical thinking, and tools and techniques. It encourages more attention to problem solving, development of understanding, geometric understanding, measurement, and probability and statistics. It suggests decreased attention to memorization and complex pencil and paper computation. (See, for example, pp. 208ff.)

Table 1 displays the percentage of instructional time teachers in California reported spending on each of ten major content areas in mathematics. It is evident from these data that teachers at both elementary and middle school spread their instructional time across a wide range of topic areas, rather than concentrating most effort on computation as did the teachers described by Porter. Problem solving, in particular, takes up around 15 percent of the instructional time overall. Communication about mathematics also receives substantial attention, especially in elementary school.

The differences between elementary and middle school curriculum follow patterns one would expect from both traditional and reform curriculum recommendations. The amount of time devoted to whole number computation declines, though more than 10 percent of the time continues to be devoted to the combination of arithmetic facts and whole number computation and estimation. Attention to fractions, decimals, ratio and proportion increases, as does time spent on algebra. The time spent on problem solving and communicating about mathematics declines dramatically, perhaps reflecting a tendency to retain the traditional mathematics curriculum more as teachers prepare students for secondary school.

Michigan

In Michigan, the *Michigan Essential Goals and Objectives* (1990) and *Position Statement on Core Curriculum and State Model Core Curriculum Outcomes* (1992; referred to as "*Core Curriculum Outcomes*" below) documents for mathematics describe the major instructional emphases. The *Core Curriculum Outcomes* (p. 38) describes a mathematically literate person as one who:

1. Values mathematics;
2. Has confidence in his/her ability to do mathematics demonstrating conceptual understanding as well as proficiency in operations skills;

3. Applies conceptual understandings, operational skills, and technological tools to problem solving;
4. Communicates mathematical ideas orally and in writing; and
5. Reasons mathematically.

The document lists several specific areas for student learning: whole numbers and numeration; fractions, decimals, ratio, and percent; measurement; geometric concepts; statistics and probability; algebraic concepts; problem solving and logical reasoning; and calculators and computers. As in California, the emphasis is on understanding and use, rather than on rote memorization and hand computation.

Like in our California schools, teachers in our Michigan sample schools reported spending some time in each of the topic areas, even indicating some attention to algebra and to statistics and probability at the elementary level. (See Table 2) Most striking, however, is that a substantial amount of time was devoted both to problem solving and to communicating about mathematics. Although almost 25 percent of the mathematics time was devoted to whole number computation, estimation, and number facts at the elementary level, this seems small in comparison to the majority of time on these topics reported by Porter, who drew on studies at the same grade levels and of Michigan schools.

Vermont

At the time of our data collection, Vermont had not completed work on its framework for curriculum and assessment. *The Vermont Common Core of Learning*, a general statement about the goals for Vermont's educational system, does not specify content goals for mathematics as an individual discipline, but does list "reasoning and problem solving" as one of the four groups of "vital results" towards which Vermont's education should aim. (The draft content standards of January 25, 1995 keep reasoning and problem solving as a category of content standards "essential to all fields of knowledge" and add more specific standards in the integrated area of "science, mathematics, and technology," as well as standards specific to "mathematical reasoning." These standards specific to mathematics, which had not been released when our survey was conducted, mention a range of mathematical topic areas, including computation, statistics and probability, estimation, problem solving and mathematical modeling.)

The state's portfolio assessment system provided more specific guidance regarding mathematics content, especially for teachers in our focal grades—4 and 8. Students were to place exemplars of their work on problem solving in these portfolios. Thus a central message in both the Common Core and the portfolio assessment was that problem solving was an important part of mathematics.

The reports of teachers in our sample schools indicate that they devote substantial time to this area, particularly at the elementary level, where 25 percent of instructional time on mathematics was on problem solving. (See Table 3.) Other areas of mathematics also received attention, however, with substantial time spent on whole number computation and

estimation at the elementary level and on algebra and fractions, decimals, ratio and proportion in middle school. Seventy five percent of the Vermont elementary sample reported they had increased the overall amount of time devoted to mathematics instruction in the past three years. (See Table 3.1.) The increase of time may reflect the time needed in implementing the portfolio assessment.

Comparison Across States

A cross-state comparison of the relative emphasis on different topic areas within a grade level shows a reasonably similar pattern of content emphasis for these reform districts. (See Figures 1 and 2.) The differences are typically less than 5 percent between schools we selected in one state and schools at the same grade level in another state

The similarities among schools at the same grade level and the difference between grade levels are much more striking. At the elementary school level, it is clear that in the schools we selected—chosen from districts with a reputation for reform—problem solving and communication about mathematics are major areas of emphasis, taking up about 30 percent of the time on mathematics between them. Whole number computation, estimation, and number facts take up about the same amount of time, but seem to receive substantially less attention than in the earlier studies reported by Porter. This apparent shift fits with the emphasis on problem solving in all three states and in national mathematics teaching associations.

At the middle school level, the patterns of content emphasis also run parallel across the schools, but show a shift emphasis from the elementary level. Most striking is the increase from elementary to middle school in the time spent on algebra, from less than 5 percent to about 15 percent and the decrease of time spent on whole number computation by about a factor of 2. These are changes in the direction that would be expected from the progression of the curriculum. One might even have expected a greater reduction in time spent on whole number computation and estimation, especially given the reputation of these districts for reform.

In addition to asking about mathematics topic areas, we also asked teachers about emphasis on various possible student objectives. This question has parallels on both the NSFMQ and NELS surveys. For this report, we focus on those areas for which such comparisons to these national samples are possible. For middle school, Table 4 shows the means for NSFMQ 5th-8th grade teachers and the NELS and RUC secondary school teachers.[5]

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[5] Some scale conversions were necessary for both. For NELS it was just converting from NELS 1-4 scale to our 0-3 scale. The NSFMQ conversion was more involved. This questionnaire used a "0" for the "none" response and "1" for minimal/minor emphasis just as we did; but they used "3" for moderate emphasis and "5" for very heavy emphasis, while we used "2" for moderate emphasis on "3" for heavy emphasis. One can imagine several slightly different ways to convert this scale to our metric, which would yield slightly different results. Given these difficulties in equating the scales on different instruments, it is safest to look across the items a-j, to see how the relative emphasis compares to that in our samples.

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Vermont and Michigan middle school teachers report that learning to explain ideas in mathematics effectively receives strong emphasis compared with their other objectives and relative to NSFMQ. (See Table 4.) This seems consistent with what these middle school teachers reported about the amount of time devoted to problem solving and to communicating about mathematics. (See Tables 2 and 3.) California teachers, however, report that they give relatively little emphasis to learning to explain ideas in mathematics effectively as well as saying that they give relatively high emphasis to learning algorithms. (Table 4.) This finding is also consistent with what California teachers report about the amount time they spend on communicating about mathematics. Table 1 indicates that the amount of time devoted to communicating about mathematics drops from 13 percent at the elementary level to 5 percent at the middle school level. Once again, this probably reflects teachers' tendency to retain the traditional mathematics curriculum more as teachers prepare students for secondary school. It is worth noting, however, that Vermont and Michigan middle school teachers in our sample schools also emphasize a more traditional mathematical middle school curriculum (Tables 2 and 3), but they maintain their emphasis on helping students learn to explain mathematical ideas. Finally, we note also that Michigan teachers give especially low emphasis to applications in science and business and industry.

We can also make parallel comparisons at the elementary school level, except that we only compare to the NSFMQ 1st-4th grade sample. (See Table 5.) The NSFMQ 1st-4th grade teachers give highest emphasis to problem solving, concepts, and applications to everyday life; they give least emphasis to applications in business and industry, applications in science, and algorithms. Our elementary sample in all three states adds learning to explain ideas in mathematics to this list of most emphasized objectives. Teachers in Michigan and California also place heavy emphasis on increasing student interest in mathematics. Vermont teachers report more emphasis on learning algorithms, and teachers in Michigan and California report lesser emphasis on computation than the national sample.

Use of technology in mathematics instruction is advocated by many reformers. In these reform districts, almost all teachers report using calculators, but use of computers in mathematics instruction is rare. About half the elementary teachers reported some use of computers. Only a quarter of the Vermont and California middle school teachers reported such use, while none of the Michigan middle school teachers used computers (Table 5.1).

Instructional Guidelines and Reported Practice: Language Arts

In this section, we examine teachers' reports of their language arts practices in each state, attempting to determine any correspondence between reform policies and teachers' practices. As with reported mathematics practices, teachers' reports on their language arts instruction must be treated cautiously. Correspondence between teachers' reported practices and language arts reform policies do not thereby indicate a policy effect. However, teachers' reports on language arts practices, when combined with interview responses, do indicate whether practices consistent with language arts reform exist among teachers in our study.

We start with a brief sketch of each state's content emphases and then consider teachers' survey responses in light of these. We then examine reported practices between states and account for differences by considering the specific direction of states' reform policies.

California

California's *English-Language Arts Framework* emphasizes "a meaning centered approach based on intensive reading, writing, speaking and listening" (*English-Language Arts Framework*, 1987, v). The reforms focus on the integration of all elements of language use as students learn to read and write. For example, when discussion questions precede a reading or writing assignment, students are better able to understand ideas in a text and improve the quality of their writing. By integrating listening, speaking, reading, and writing into all aspects of a literature-based language-arts instruction, the reforms are designed to help students acquire the language arts skills needed to solve problems and make independent decisions.

The survey data reflect some of these aims. Writing instruction at the middle school level, for example, focuses most on the process of writing. California middle school teachers report spending over five hours per week on having students draft, revise, proofread, and edit their writing. Considerably less time (two hours per week) is devoted to spelling, handwriting, and grammar and punctuation.

Reading instruction at the elementary level also reflects the aims of reform. Teachers report that during reading instruction their students spend three and one-half hours per week on comprehension strategies and responding to what they read. The least amount of time is spent on word recognition skills (30 minutes) and phonics (19 minutes). While students participate in a wide range of activities during reading instruction, there is some evidence that teachers give more emphasis to activities consistent with the direction of reform. Reform documents suggest that students gain a better understanding of what it is they are supposed to learn when they "are asked open-ended questions and invited to explore many possible answers" (*English-Language Arts Framework*, 1987, 15). Teachers report that students spend the highest percentage of instructional time understanding concepts. Teachers also devote a high proportion of instructional time to such activities as questioning, analyzing, and applying. Considerably less time is devoted to memorizing and classification activities (Table 6).

One other area of response also reflects another reform recommendation. California emphasizes "a literature-based English language arts curriculum that engages students with the vitality of ideas and values greater than those of the marketplace or video arcade" (*English-Language Arts Reforms*, 1987, p. 7). Elementary teachers in our survey report that their reading instruction is literature-based. When asked what percentage of time in reading instruction is spent on different sorts of reading materials, such as reading or subject basals, literature trade books, workbooks/worksheets, or something else, teachers say that 80 percent of instructional time is spent using literature trade books.

Michigan

Michigan's reading outcomes also emphasize that reading is a process of constructing meaning from texts. The reforms are designed to encourage teachers to alter their reading instruction in ways that prepare students "to construct meaning from texts under all instructional conditions, for all possible purposes, and in all subject areas" (*Language Arts Outcomes*, p. 56).

The survey data suggest that Michigan teachers in our study emphasize reading content that matches the direction of reform in the state. Teachers had not increased the amount of time devoted to reading over the past three years. However, both elementary and secondary teachers in our study indicate that they spend most instructional time on comprehension strategies and encouraging students to respond to author's intentions. As Table 7 indicates, teachers report spending over three hours per week on comprehension strategies and having students respond to what they read and barely over one-half hour per week on basic skills, such as phonics and word recognition.

There is some question whether teachers integrate reading into other subject areas as recommended by the reform documents. Michigan teachers in our survey say that they integrate reading with instruction in other subject areas, but when asked what instructional materials they use during reading instruction, teachers report that subject basals receive no attention. (See Table 8.) Based on our teachers' reports, some components of the language arts reforms, notably integrating reading into other subject areas, has not taken hold, while other components, such as activities related to students constructing meaning from texts, have.

Vermont

Vermont's *Common Core of Learning* encourages an integrated curriculum with teachers as facilitators of learning. "Science and math and English are no longer boxed apart.... Teachers no longer just deliver information—they work with students as coaches and guides and partners in learning" (*Common Core of Learning*, p. 1). The focus of the *Common Core* is also on "results" that are demanding and demonstrable. In writing, the *Common Core* also accents that students should write effectively for many purposes, understand and employ a writing process, and be able to reflect on and evaluate their own writing (p. 3).

Vermont's writing assessment program preceded the publication of the *Common Core* but nonetheless reflects its aims. Vermont's portfolio-based approach to writing assesses student writing in five areas: purpose, organization, details, voice/tone, and usage/mechanics/grammar. The writing portfolio assesses both the stages of the writing process (prewriting, writing drafts, editing, etc.) and the mechanics of grammar and spelling.

This combination of emphases is reflected in the survey responses. Elementary teachers spend nearly two hours a week on spelling, grammar/punctuation and handwriting. They spend over three and one-half hours a week on various stages of the writing process. Teachers report their students spend the most time per week writing drafts (70 minutes) with

spelling (73 minutes) and grammar/punctuation (57 minutes) also receiving a larger proportion of instructional time. (See Table 9) Middle school teachers report a similar emphasis on both mechanics and the writing process, with relatively more emphasis on grammar, prewriting and editing activities. Insofar as Vermont's writing reform reflects an emphasis on both the process of writing and mechanics, teachers' survey responses are consistent with the direction of reform.

Comparisons between States

The survey data also enable us to make some comparisons between states. Both California and Michigan language arts reform policies emphasize that reading is a process of constructing meaning from texts. California's reform documents, however, give specific attention to both cooperative group learning as well as students' independent learning. The California *Frameworks* emphasize that students learn more about literature or a piece of writing when time is allocated for them to discuss their ideas. "Students who learn to work with each other in cooperative learning groups based on mutual interests and criteria other than ability develop their capacity to use language creatively and critically" (*English-Language Arts Frameworks*, 1987, p. 26).

The emphasis on cooperative learning groups in California is reflected in survey comparisons. As already noted in our examination of individual states, both Michigan and California's elementary teachers report instructional practices that encourage students to construct meaning from texts. As Table 10 shows, both state's teachers also report spending roughly the same amount of time per week on reading instruction.

The organization of instruction, however, differs considerably. Michigan teachers emphasize more whole group and individual activities during reading instruction than their California counterparts. California teachers spend over four and one-half hours per week with students engaged in small group reading activities, such as working in pairs or teams and small group discussions; Michigan students spend less than two and one-half hours per week in these kinds of activities. (See Table 11.)

Careful readers will note that the sum total of time teachers report they allocate to each reading activity (Table 11) is greater than the amount of time per week teachers report teaching reading (Table 10). This probably reflects teachers' perception that time allocated to one reading activity may also be time allocated to another. For example, teachers may have thought that time allocated to small group discussions and small group lessons should also be included when reporting the time allocated to students working in teams or pairs. Though this explanation may not account for all discrepancies, we think that the larger proportion of time California teachers report spending on small group reading activities reflects a real difference in instructional practices between Michigan and California teachers in our survey. This difference is consistent with the emphasis given to dissimilar aspects of the language arts reform policies in the two states.

California and Vermont middle school teachers of writing both fit the general pattern of moving in the general direction of reform efforts, while continuing to give some weight to more traditional topics. The curricular guidance from both states stresses process writing. California emphasizes "a writing program that includes attention to the various stages of writing process—from pre-writing to post-writing." Vermont's *Common Core* underscores that a student should "understand and employ a writing process" (p. 3). While teachers in these two states do spend a great deal of time on the components of process writing, they also emphasize components of the mechanics of writing, such as spelling, grammar, and punctuation. (See Table 12.) As with other information on content emphasis, teachers may be following state guidance in their emphasis on process writing, or they may be responding to messages from other sources, such as the various writing projects.

Perceptions of Influences on and Control of Instruction

Building on research in earlier studies that examined relationships between practice and policy, our survey asked teachers for their perceptions about how much they were influenced by various factors and how much control they had over aspects of their school or classroom.

State Guidance as One of Many Influences on Instruction

Teachers' responses to a survey item on influence support the idea that state expression of curricular guidelines are seen as only one among many factors affecting classroom practice. The survey item, written to allow some comparisons with other studies, gave a list of possible influences and asked teachers to indicate for each the extent to which it influenced the content and methods of their instruction. For the middle school teachers, the question was specific to either mathematics or writing instruction. Elementary teachers responded to two items, one for each subject area. Teachers responded on a 0-3 scale, where "0" stood for "no influence" of a factor and "3" stood for "extensive influence." (See Tables 13 and 14)

Of the items on the list, "state curriculum guide" best represents the curricular guidance articulated by the state. The average rating given to this item varies across grade level, state, and subject area, from a high of 2.13 for elementary mathematics in the California schools to a low of 0.6 for elementary reading in Michigan. By contrast, the tables show a stronger reported influence for the group of items about teachers' individual beliefs and perceptions of student interests and needs. The means for these items are typically over 2.0, many times over 2.5.

One general conclusion is that teachers in these reforming schools see these states guides as having some influence, but the state guides do not stand out as a primary influence.

Teachers are more influenced by their own beliefs and their perception of the students. The survey does not allow teachers to indicate where teachers own beliefs and knowledge come from. It is possible that state articulations of a vision have been internalized by teachers, thereby having an indirect influence. But the interview responses suggest that teachers are more aware of national trends, so state efforts once more seem more a part of a broader picture than a dominant force.

The strong influence these teachers attribute to their own knowledge of the subject matter points toward the importance of individual capacity building as an influence on classroom practice. If professional development activities, for example, enhance teachers' knowledge in mathematics or writing, teachers see a likely connection to the content and methods of instruction.

Teachers' Sense of Control over Instruction

We have some evidence about how much teachers in these reform districts believed that decision making was being made locally. Our survey included two items that permit comparison between these teachers perceptions and broader samples of teachers. What we see is that the teachers generally see themselves as having a great deal of control over these matters, usually more than teachers in the national samples. For the inservice activities, the greater sense of control over inservice is accompanied by a rate of participation considerably greater than reported in national surveys. An exception is control over the content of inservice programs, where the results for the two Michigan districts are close to the national average or below for elementary school.

These are the items that start "At this school, how much actual influence do you think teachers have ...", "How much control do you feel you have in your classroom over selecting ...", and "To what extent do the following categories influence..." On the "To what extent ..." item, our survey included a longer list of possibilities than any of the national studies used. This report focuses on the options for which we have national comparison data.

We present the means for all three states and both subjects, but caution you to remember that NELS and NSF results are for mathematics. Also recall that, for middle school, our sample within each state for a particular subject is only a few teachers.[6]

Overall the middle school teachers in our sample report feeling more influence over these school-level matters. (See Table 15.) One area of exception is control over the content of inservice programs, where California mathematics and writing were at the national

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[6]Where necessary, we have converted the scales used to match ours. For the "at this school" items, NELS used a 1-5 scale, rather than 1-6, so we multiplied the average by 6/5. For the "in your classroom" items, the same applies for NSFMQ. For "To what extent..." NSFMQ numbered their scale 1-4, rather than 0-3, so we subtracted 1 from the average.

average or below. The other exception is control over policies on grouping, where the Vermont writing teachers were down near the national average.

The elementary school teachers feel that, in math, they have more influence over these matters than the national sample, though the Michigan and Vermont teachers don't feel that they have quite as much influence as their middle school counterparts; the reverse is true in California, where the elementary teachers are almost at the top of the scale. (See Table 16.) In language arts, elementary teachers in California and Vermont are far above the national comparison groups; the Michigan teachers are closer to the national average, especially in control over inservice programs, the area where they were also low at the middle school level.

For their classroom (as opposed to the whole school), middle school teachers across all the studies seem to feel that they control selection of their teaching techniques and criteria for grading students, especially the former. (See Table 17.) Responses differ for selection of texts and content/topics, however. One obvious dimension of difference is across subject areas, with the language arts teachers feeling greater control; the exception is Vermont on text selection, where mathematics teachers also feel great control. This difference is reflected in the national studies as well. For mathematics teachers across states, Vermont teachers feel most in control of selecting texts and topics; California teachers least. Michigan and the national (math) samples are both in the middle. For language arts, the same is true for selecting texts, but there is little difference in selecting topics.

As with the middle school level, elementary school teachers across all studies feel a high degree of control over selection of teaching techniques and grading. (See Table 18.) Unlike our middle school sample, however, these elementary teachers all also feel a high degree of control over selection texts and topics, with a slightly lower level in the Vermont teachers' responses about selection of texts.

Where Do Teachers Turn for Opportunities to Learn?

As we argue in the next chapter, simply having control of decisions about curriculum is not sufficient to make changes in instruction. Teachers may wish to teach in different ways, yet realize that they need to gain additional knowledge or skill before they have the capacity to make the change. A critical component of capacity building is thus to give teachers opportunities to learn what is needed. In this section, we draw on our interviews and surveys to describe what teachers say they want to learn, where they turn for help, and how much they have actually participated in professional development.

What Do Teachers Want To Learn?

Teachers in our study differed in the reasons they seek assistance and in the kinds of help they seek. Most are looking for help in implementing new instructional strategies, particularly in those subject areas that are covered by state assessments, or affected by recent curriculum revisions. Teachers in California and Vermont also sought help in learning about and implementing the new kinds of assessment included in their states' testing programs. But, teachers were also concerned about how to deal with inclusion, multiculturalism, bilingualism, adolescent development, student behavior, teacher and student collaboration (teaming, cooperative learning), etc.

A list of some of the topics addressed during one school's weekly half-day of professional development time gives one a sense of the variety of issues facing teachers today, particularly at the elementary school level: planning for a common unit incorporating the seven intelligences, cross-grade collaborations on a writing activity, sharing cooperative learning strategies, implementing the district's new mathematics and reading series and math/science kits, coordinating the implementation of student progress reports and TQM, and organizing journal writing and ecology projects.

Where Do Teachers Say That They Turn for Help?

In our interviews, we asked teachers to whom they turn when they wanted help in improving student learning mathematics or language arts instruction. The range of sources of assistance reflected the kinds of help they wanted, what was available, and what was convenient for them. Most teachers reported they turn to other teachers and to subject matter specialists, such as the reading consultant or project coaches working with their schools, recognizing who has developed expertise through training and experience. Several teachers in our Michigan districts also mentioned their principal as a source of guidance. Teachers turned to subject area networks, such as the Subject Matter Projects in California and the mathematics and writing assessment networks in Vermont, and/or to workshops sponsored by professional associations, such as the Michigan Council of Teachers of Mathematics (MCTM) and the Michigan Reading Council, and by their local colleges and universities.

In California and Michigan, few teachers reported taking formal course work at universities, beyond what was required to complete a degree requirement. College courses were more frequently mentioned in Vermont, however. Teachers faced limited time (family demands), limited resources (districts would not reimburse them the cost of tuition), and limited access (distance to the nearest university) to this source of capacity-building. Distance also presented some problems in Vermont, but the districts there did offer to reimburse teachers for college tuition.

To supplement these reports from our interviews, we asked survey questions about participation in inservice activities of various types that were related to the teaching of

mathematics and reading/writing. One item asks what types of support for professional development were available. (See Table 19 and Table 20.) A separate question was asked about whether teachers had participated in specific types of inservice activity. Activities ranged from school-system sponsored workshops to committee work to college course taking as well as professional activities sponsored by professional associations. (See Table 21 and Table 22.) It should be noted that the survey reflects traditional inservice categories and does not attempt to capture qualitative differences in support for professional development.

Because similar questions were included in the NELS Follow Up, we have some basis for comparing teachers in these reform districts with national average participation. The comparison must be made with caution, however, because the NELS respondents were typically teaching 10th grade. In general, secondary school teachers tend to be more oriented toward their fields of subject specialization than teachers at the lower grades. Some consequent shift in the pattern of opportunities for capacity building seems likely. In our tables, we include the NELS comparison only for the middle school teachers, where the difference in level is often only two grades (i.e., between 8th and 10th).

As with previous sections, we start with a sketch of the range of professional development opportunities teachers have in each of our sample states and districts.

Vermont

Our sample districts support a range of activities connected with reform. Both districts have voluntary reimbursement programs that reimburse teachers for up to six college course credits per year. Vermont districts also use curriculum committees as ways of developing curriculum and building the knowledge of the teacher participants about new teaching practices. The districts further support several days of in-service per year and make use of Eisenhower grants to help K-8 teachers make curriculum changes in mathematics and science. One district supports teachers' participation in Chicago Math (an innovative mathematics program that selected elementary teachers examined and chose to work with in their teaching).

The state also supports teachers' professional development mainly through networks in mathematics and writing. These networks are located in each of the state's 15 regions, and teachers are released from teaching three to four times a year for half a day to participate. Network goals include disseminating information to teachers about the content of the state's portfolio assessment, helping teachers score assessments, and sharing resources about, for example, mathematics problems teachers can use with students. The state also supports professional development for helping teachers work with at-risk students (Act 230).

This level of participation in professional development seems high, as we would expect for a reform district. On a survey question, Vermont middle school teachers report participation far above the NELS average in the proportion who received released time from their teaching for work with writing. (See Table 19.) The participation of elementary teachers also seems high. Though we have no national average to compare to at this level, we

note that the participation percentages for elementary are almost as high as those for middle school teachers. Professional development for elementary teachers is higher in mathematics than in writing, which reflects many comments that the curriculum suggested in writing was much like what many teachers were already doing.

Next, we look at teachers' participation in different types of professional development activities. (See Table 21 and Table 22.) The activities in which all teachers were most involved were school-system workshops and work on curriculum committees. For middle-school teachers, there was also high participation in activities sponsored by the professional associations. Once again, elementary teachers did more in mathematics than in writing. Many of these teachers also took college coursework, with elementary school teachers taking classes in education and middle school teachers taking classes in other fields, presumably often in mathematics or in English. This pattern of continuing coursework fits with the district policy of offering tuition credits as a part of its support for staff development.

We can look at the results from the national NELS survey of 10th grade teachers as a basis for comparison. The national sample had a similar pattern of highest participation in school-system workshops, committee work, and professional associations. The striking difference comes in the higher levels of participation, especially in college coursework, for middle school mathematics teachers. As with sources of support, the elementary teachers reported more participation in mathematics than in writing. This intensive work in mathematics confirms the many interview comments that Vermont teachers see their current practice in mathematics as requiring more of a change than their practice in teaching writing.

California

The state supports professional development efforts linked to reform in a number of ways. One major effort has been the Subject Matter Projects. The projects are designed to expand the number of teachers knowledgeable about the curricular initiatives and increase the teacher pool of curriculum leaders. A main component of the Subject Matter Projects are four to six week-long summer institutes that offer teachers opportunities to work with other teachers in specific content areas. The projects also have some form of follow-up throughout the year, and districts can pay for additional assistance. The state also supports other professional development through state-sponsored reform activities as well as providing $13 million (SB 1882) to districts who in turn allocate money to schools for professional development. Furthermore, the state encourages site-based change by supporting grade level networks as well as a variety of school restructuring and improvement efforts.

Sample districts' level of participation in the California initiatives varies. In the one district, professional development is extensive. Teachers have access to a number of university-based initiatives, including the Subject Matter Projects. Furthermore, the district has in place a coordinated effort to offer teachers a range of professional development opportunities, especially in mathematics and science. For example, the district has supported the development of teacher leaders in science. Over a four-year period, 24 elementary teachers have attended summer institutes to learn more about specific science content and

science teaching with intensive and highly coordinated follow-up during the school year. Also, a science museum provides workshops for district teachers. In the other district, professional development mainly takes the form of workshops on designated, state-supported professional development days. Teachers in this district also have access to subject matter projects at two local universities and participate in grade level networks.

Turning to the types of support California teachers say they received, a high proportion of teachers report getting released time for their work in mathematics. Among sample elementary teachers, the proportion is far above the NELS average. (See Table 20.) Middle school mathematics teachers are also above the NELS average in all other categories of support. (See Table 19.) Writing teachers at the middle school levels report support for released time, stipends, professional growth credits.

With the specific types of inservice activity, there is a much higher rate of participation in summer workshops among elementary mathematics and reading teachers in our sample. This may reflect teachers' participation in summer institutes connected with the California Subject Matter Projects as well as district-sponsored summer institutes. Elementary mathematics teachers also had high rates of participation on curriculum committees and other committee work.

What is striking in California is that few teachers took any college courses. Perhaps the availability of other opportunities left teachers with little time for formal college work, or perhaps they did not find coursework that seemed suited to their needs.

Michigan

The districts in our Michigan sample also offer relatively strong support for professional development. One district, for example, provides six one-half days of time per year for different kinds of inservice activities; the other district funds two-week summer enrichment sessions where teachers are encouraged to experiment with new instructional techniques. Both districts have implemented professional development schools in some of their schools. Also, both districts restructured the school day to free one-half day per week for teacher/staff meetings, though in one district this was restricted to middle and high school faculty. With funds from the Joyce foundation, one of the sample districts also trained 24 teachers to implement a system of peer coaching. The districts also use curriculum committees to develop curriculum and introduce teachers to new forms of teaching and learning.

The state plays a modest role in supporting teachers' professional development. It recently increased its professional development funding from two million to ten million dollars per year. (This increase came after we conducted our site visits, and we do not know how our districts' professional development was influenced.) The state also offers an extended school year grant which provides $200 per pupil to local school districts for up to three years to extend their school year to 200 days. One district in our study received a $1.1 million extended school year grant which also required teachers to complete 20 hours of professional development during the school year. Also, the Michigan state department of

education co-sponsors 17-workshops on elementary and middle mathematics instruction. The Michigan Reading Association and the Michigan Council of Teachers of Mathematics have also played a major role in capacity building. Both organizations assisted with revisions to the state's Essential Goals and Objectives in reading and mathematics and are involved in developing the state's curriculum frameworks and assessments. Also, teachers in one of our sites were involved with a university-based project sponsored by the National Science Foundation, the Middle Grades Math Project.

Given the range of activities available in the sample districts, it is surprising that so many Michigan elementary teachers indicated on the survey that they received no support for professional development over the past year. (See Table 20.) This may reflect the lack of time these teachers are afforded to participate in professional development activities rather than their availability, or their participation in activities focused on other instructional issues. In contrast, however, middle school mathematics and reading teachers report receiving support far above the NELS average.

In the types of professional activities teachers report participating in, most striking is elementary teachers' high rate of participation on mathematics curriculum committees. This perhaps reflects districts' use of curriculum committees to introduce teachers to new practices. If so, it does not hold for reading where elementary teachers report little participation. Among both elementary and middle school reading teachers, Michigan teachers' rates of professional development participation are low in comparison to the reform districts in our other two states. One possible explanation is that the state has not changed its reading objectives since the mid-1980s, so teachers are focusing on more recent curriculum changes, like mathematics and science.

As in California, participation in formal college courses is a small part of the professional development these teachers undertake.

Summary Across States

In these reform districts, a comparatively high proportion of teachers had received support for professional development in mathematics and language arts the previous year. At the national level, about half of all teachers said they received none of the types of support we asked about. With the exception of Michigan elementary teachers, the vast majority of teachers in these reform districts received at least one of these forms of support. Most teachers participated in school system sponsored workshops and were involved in committee work. At the middle school level, they also took part in professional association activities. Clearly, teachers in these districts took some part in professional development.

The fact that participation was higher for mathematics than for language arts is due at least in part to teachers' sense that they were being asked to make bigger changes in that subject area, changes requiring considerable new learning for them.

Teachers generally reported going to colleagues for assistance, but teachers in the Vermont districts providing support for college tuition did take advantage of that opportunity. That may suggest that, despite some comments that colleges do not provide content of most use to teachers, it is the cost of participation that represents a major barrier.

Conclusion

The teachers in our reform-district sample report a pattern of classroom practice that is moving toward the recommendations of reformers. In mathematics, we find that problem solving and communication about mathematics are major areas of emphasis for these teachers, particularly at the elementary school level. At the middle school level, there is more time spent on traditional mathematics topics but, for most teachers, there is also an emphasis on helping students learn to communicate about mathematics. In language arts, teachers' reported practices are also generally consistent with the direction of reform called for in state and national curriculum recommendations. Many of the teachers report a focus on the process of writing, on understanding and analysis, and on encouraging students to construct meaning from texts.

But in both mathematics and language arts content areas, some of the teachers in our sample suggested that they were hesitant to completely give up some of the content they taught in the past. In addition, the reform emphasis on integration of content across subject areas is embraced by some teachers, but not by others. This is not necessarily at odds with the intentions of reformers, who may advocate a mix of content, rather than a radical shift.

In their responses about feelings of control and influence, teachers in our sample generally reported a great deal of control, even more than teachers in other national studies. Teachers' feeling of control offers some support for the idea that, in these districts selected for their reputation for reform, teachers feel that they have an important role in shaping the directions they may take. At least in these reform districts, state systemic reform efforts do not seem associated with teachers' feeling a loss of control over important aspects of their schools and classrooms. This is consistent with the fact that teachers report that state policy instruments were only one of several influences on their instruction, and that their own knowledge about the subject and of their students was generally a greater influence.

Finally, most teachers in our sample report a high level of support for professional development. The support they receive is sometimes consistent with systemic reform initiatives in a particular state, as we see among Vermont teachers who receive released time from teaching to participate in the mathematics teacher networks. We also find that sample teachers' rates of participation in specific activities is consistent with reform initiatives, with more teachers engaged in mathematics-related inservice, where the reforms seem most demanding.

In sum, teachers in these reform districts report feeling considerable control over their curricular decisions and at least some involvement in professional development. They report moving in the general direction of curricular reforms in our focal subjects, while not wishing to move too far. In making their decisions, they feel most influenced by their own knowledge of the subject and of their students. State policy instruments are felt to have some, but lesser, influence.

What does this say about the capacity of these reform districts to improve student learning in mathematics and language arts? What might states do if they wished instructional practice to match state goals more closely? To address these questions, we take a more careful look at what is meant by "capacity" and how it is related to professional development and state policies in the following chapters.

Table 1
Percent Time on Topic Area in Mathematics: California

Topic Area	Middle	Elementary
Numeration and number relations	9%	8%
Whole number computation and estimation	7%	12%
Whole number arithmetic facts	4%	5%
Fractions, decimals, ratio, and proportion	21%	15%
Measurement	9%	11%
Statistics and probability	7%	6%
Geometry	8%	11%
Algebra	17%	3%
Problem solving and reasoning	12%	18%
Communicating about mathematics	5%	13%

Table 2
Percent Time on Topic Area in Mathematics: Michigan

Topic Area	Middle	Elementary
Numeration and number relations	8%	11%
Whole number computation and estimation	8%	14%
Whole number arithmetic facts	3%	11%
Fractions, decimals, ratio, and proportion	17%	8%
Measurement	9%	10%
Statistics and probability	7%	4%
Geometry	9%	10%
Algebra	17%	4%
Problem solving and reasoning	14%	19%
Communicating about mathematics	8%	10%

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Table 3 Percent Time on Topic Area in Mathematics: Vermont		
Topic Area	Middle	Elementary
Numeration and number relations	6%	11%
Whole number computation and estimation	7%	19%
Whole number arithmetic facts	7%	8%
Fractions, decimals, ratio, and proportion	14%	8%
Measurement	6%	7%
Statistics and probability	8%	5%
Geometry	11%	7%
Algebra	14%	2%
Problem solving and reasoning	16%	25%
Communicating about mathematics	11%	9%

Table 3.1 Percent of Elementary Teachers Reporting an Increase in Overall Amount of Time Devoted to Mathematics Instruction over the Past Three Years			
	Vermont	Michigan	California
It has increased	70%	30%	37.5%

Table 4
Mathematics Objectives: Middle School

"In your mathematics instruction, how much do you emphasize each of the following student objectives?"

(0 = "none"; 3 = "heavy emphasis")

*Caution: Middle School teacher data from the Systemic Reform Survey (SRS) are based on mainly eighth grade teachers. Data from the other surveys include other grade levels.

NSFMQ: Based on teachers from fifth to eighth grade.
NELS: Based on teachers in only tenth grade.
RUC: Based on teachers in ninth grade to twelfth grade.

Surveys	SRS	SRS	SRS	NSFMQ	NELS	RUC
States	VT	MI	CA	National	National	6 states
Increase interest in mathematics	2.25	2.33	2.20	2.24	2.15	2.26
Learn mathematical concepts	2.75	3.00	2.80	2.54	2.59	\
Learn mathematical algorithms	1.75	1.67	2.40	1.86	2.35	\
Learn how to solve problems	3.00	3.00	2.40	2.63	2.56	2.43
Learn to perform computations with speed and accuracy	1.50	1.67	2.00	2.03	1.93	\
Increase awareness of the importance of mathematics in daily life	3.00	2.50	2.20	2.48	2.24	2.07
Prepare for further study in mathematics	2.50	2.50	2.80	2.33	\	\
Learn about applications of mathematics in science	2.00	1.33	1.80	1.67	1.86	1.31
Learn about the applications of mathematics in business and industry	2.00	1.33	1.40	1.78	1.70	1.47
Learn to explain ideas in mathematics effectively	2.75	2.50	1.60	1.95	\	\

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Table 5
Mathematics Objectives: Elementary School

"In your mathematics instruction, how much do you emphasize each of the following student objectives?"

(0= "none"; 3 = "heavy emphasis")

CAUTION: Elementary School teacher data from Systemic Reform Survey (SRS) are based on mainly fourth grade teachers.
Data from the other surveys include other grade levels.
NSFMQ: Based on teachers from first to fourth grade.

Surveys	SRS	SRS	SRS	NSFMQ
States	VT	MI	CA	National
Increase interest in mathematics	2.30	2.90	2.63	2.36
Learn mathematical concepts	2.50	3.00	2.88	2.66
Learn mathematical algorithms	2.20	1.90	1.63	1.75
Learn how to solve problems	2.70	2.50	2.75	2.65
Learn to perform computations with speed and accuracy	2.00	1.60	1.50	2.17
Increase awareness of the importance of mathematics in daily life	2.50	2.10	2.63	2.47
Prepare for further study in mathematics	1.90	1.90	2.25	2.20
Learn about applications of mathematics in science	1.60	2.10	2.13	1.66
Learn about the applications of mathematics in business and industry	1.20	0.90	1.88	1.33
Learn to explain ideas in mathematics effectively	2.60	2.50	2.88	1.86

Table 5.1
Percent of Teachers Who Reported No Time was Spent on COMPUTERS as Part of Mathematics Instruction

	Vermont	Michigan	California	Vermont	Michigan	California
	Elementary	Elementary	Elementary	Middle	Middle	Middle
Students do not spend time working with computers	40%	60%	37.5%	75%	100%	60%

Percent of Teachers Who Reported No Time was Spent on CALCULATORS as Part of Mathematics Instruction

	Vermont	Michigan	California	Vermont	Michigan	California
	Elementary	Elementary	Elementary	Middle	Middle	Middle
Students do not spend time working with calculators	0%	0%	12.5%	25%	0%	0%

Table 6 Percent Time Students Spent in Reading Using Cognitive Processes	
	CA Elementary
a. Memorize (e.g., spelling, vocabulary, grammar)	1.6%
b. Understand concepts	14.5%
c. Classify/Order/Group/Outline	4.4%
d. Comprehend/Summarize	13.6%
e. Interpret/Question	11.6%
f. Investigate/Question	11.1%
g. Analyze/Infer	13.1%
h. Evaluate/Critique	8.8%
I. Identify with another's point of view	9.4%
j. Apply/Create	11.9%

Table 7 Amount of Time Spent Per Week on Each Area in Reading		
	MI Elementary	MI Middle
Phonics	12.5 Mins	0 Mins
Word recognition	24.5 Mins	20 Mins
Word meaning	45 Mins	20 Mins
Comprehension strategies (e.g., summarizing, self-questioning)	135 Mins	60 Mins
Text types (e.g., narrative, adventure, biography)	63 Mins	70 Mins
Text features (e.g., charts, headings, metaphors)	50 Mins	30 Mins
Responding to reading (e.g., author's intent, evaluations)	72 Mins	41.3 Mins

Table 8
Percent Time Spent in Reading
Using Type of Instructional Materials

	MI Elementary	MI Middle
Reading basals	36.0%	20.0%
Trade books - literature	50.0%	40.0%
Subject basals	1.7%	7.5%
Workbooks/worksheets	9.0%	11.3%
Other	4.0%	21.3%

Table 9
Average Time Spent Per Week on Specific Writing Activities

	VT Elementary	VT Middle
Prewriting	31.7 Mins	52.5 Mins
Writing drafts	70 Mins	72 Mins
Revising	33.3 Mins	60 Mins
Proof-reading	30 Mins	36 Mins
Editing	40 Mins	45 Mins
Publishing	46.7 Mins	30 Mins
Style	21.4 Mins	22.5 Mins
Purposes of writing	26.3 Mins	24 Mins
Spelling	73.3 Mins	30 Mins
Grammar/punctuation	56.7 Mins	66 Mins
Handwriting	30 Mins	0 Mins

Table 10
Average Time Spent Per Week on Reading
(Elementary School)

MI Elementary	386.1 Mins
CA Elementary	400.7 Mins

Table 11
Average Time Spent Per Week on Reading Activities
(Elementary School)

	MI Elementary	CA Elementary
Whole class lessons	84 Mins	57.5 Mins
Whole class discussion	107 Mins	79.4 Mins
Teacher read aloud	44.5 Mins	78.1 Mins
Small group lessons	19.5 Mins	79.4 Mins
Small group discussion	24 Mins	57.5 Mins
Students working in pairs/teams/ small groups	93 Mins	141 Mins
Individual work	93 Mins	75 Mins
Routines, interruptions, other non-instructional	8 Mins	5.6 Mins

Table 12
Average Time Spent Per Week on Specific Writing Activities

(Middle School)

	VT	CA
Prewriting	52.5 Mins	36 Mins
Writing drafts	72 Mins	102 Mins
Revising	60 Mins	78 Mins
Proof-reading	36 Mins	72 Mins
Editing	45 Mins	72 Mins
Publishing	30 Mins	36 Mins
Style	22.5 Mins	42 Mins
Purposes of writing	24 Mins	48 Mins
Spelling	30 Mins	48 Mins
Grammar/punctuation	66 Mins	72 Mins
Handwriting	0 Mins	6 Mins

Table 13
Perceived Influence on Instruction: Middle School

"To what extent do the following categories influence the content and methods of your MATH instruction?"
(0 = "no influence"; 3 = "extensive influence")

Surveys	SRS	SRS	SRS	NSFMQ	RUC
States	VT	MI	CA	National	6 states
Textbook/Instructional materials	2.25	2.67	1.0	2.14	0.85
District assessment	1.75	1.67	1.2	1.58	1.31
State assessment	2.00	1.83	1.4	1.79	1.42
District curriculum guide	2.00	1.67	1.2	2.40	0.58
State curriculum guides	1.50	1.83	1.6	2.15	1.02
My principal	1.50	0.67	1.0	\	2.03
My initial teacher preparation	1.75	1.50	1.2	\	\
Inservice training	1.25	1.67	1.6	\	\
Other teachers	1.50	2.33	2.6	\	\
Student interests	1.25	2.00	2.0	\	\
Student needs	2.50	2.83	2.8	\	1.51
My knowledge about particular topics	1.75	2.17	2.2	\	1.26
My beliefs about what topics are important	2.75	2.50	3.0	\	1.79

*Caution: Middle School teacher data from Systemic Reform Survey (SRS) are based on mainly eighth grade teachers. Data from the other surveys include other grade levels.

NSFMQ: Based on teachers from fifth to eighth grade.
RUC: Based on teachers in ninth grade to twelfth grade.

Slashes (\) represent corresponding items are not available in a particular survey.

Table 13, p.2
Perceived Influence on Instruction: Middle School

"To what extent do the following categories influence the content and methods of your READING (WRITING) instruction?"
(0 = "no influence"; 3 = "extensive influence")

Surveys	SRS	SRS	SRS
States	VT	MI	CA
Textbook/Instructional materials	0.83	2.67	1.4
District assessment	1.67	1.67	1.4
State assessment	1.67	1.83	2.0
District curriculum guide	1.17	1.67	1.8
State curriculum guides	0.83	1.83	1.8
My principal	1.00	0.67	0.4
My initial teacher preparation	0.83	1.50	1.0
Inservice training	1.00	1.67	2.4
Other teachers	1.33	2.33	2.0
Student interests	2.33	2.00	2.0
Student needs	2.83	2.83	2.4
My knowledge about particular topics	2.00	2.17	2.4
My beliefs about what topics are important	2.17	2.50	2.6

Table 14
Perceived Influence on Instruction: Elementary School

"To what extent do the following categories influence the content and methods of your MATH instruction?"
(0 = "no influence"; 3 = "extensive influence")

Surveys	SRS	SRS	SRS	NSFMQ
States	VT	MI	CA	National
Textbook/Instructional materials	1.90	2.20	1.13	2.14
District assessment	1.30	2.00	1.63	1.85
State assessment	2.10	2.20	2.25	1.93
District curriculum guide	1.80	1.60	1.50	2.51
State curriculum guides	1.30	1.10	2.13	2.26
My principal	0.70	1.70	1.13	\
My initial teacher preparation	1.20	1.70	1.75	\
Inservice training	2.20	1.70	2.75	\
Other teachers	1.90	2.40	2.25	\
Student interests	2.30	1.70	2.50	\
Student needs	2.90	2.80	2.88	\
My knowledge about particular topics	2.50	2.50	2.50	\
My beliefs about what topics are important	2.90	2.90	2.63	\

"To what extent do the following categories influence the content and methods of your READING (WRITING) instruction?"
(0 = "no influence"; 3 = "extensive influence")

Surveys	SRS	SRS	SRS
States	VT	MI	CA
Textbook/Instructional materials	1.10	1.10	1.00
District assessment	1.70	0.60	1.50
State assessment	2.40	1.00	1.50
District curriculum guide	1.70	0.90	1.63
State curriculum guides	1.70	0.60	2.00
My principal	0.30	0.80	1.25
My initial teacher preparation	1.20	2.20	1.75
Inservice training	1.70	1.80	2.38
Other teachers	1.90	2.10	2.25
Student interests	2.60	2.80	2.75
Student needs	2.80	2.60	2.75
My knowledge about particular topics	2.00	2.10	2.63
My beliefs about what topics are important	2.10	2.50	2.50

*Caution: Elementary School teacher data from Systemic Reform Survey (SRS) are based on mainly fourth grade teachers. Data from the other surveys include other grade levels.

NSFMQ: Based on teachers from first to fourth grade.

Slashes (\) represent corresponding items are not available in a particular survey.

Table 15
Influence on School Policies: Middle School

"At this School, how much actual influence do you think teachers have over policy about MATH instruction for the following?"
(1 - "no influence"; 6 = "a great deal of influence")

Surveys	SRS	SRS	SRS	RUC	NELS	SASS
States	VT	MI	CA	6 states	National	National
The content of inservice programs	5.00	4.00	3.4	3.17	3.42	3.48
Policies on grouping	4.50	5.33	4.8	2.78	3.17	3.17
The curriculum	5.25	5.33	4.8	3.2	3.93	3.7

"At this School, how much actual influence do you think teachers have over policy about READING (WRITING) instruction for the following?"
(1 = "no influence"; 6 = "a great deal of influence")

Surveys	SRS	SRS	SRS	NELS	SASS
Subjects	Writing	Reading	Writing	English	English
States	VT	MI	CA	National	National
The content of inservice programs	4.5	4.2	3.3	3.48	3.49
Policies on grouping	3.2	4.2	4.5	3.17	2.96
The curriculum	5.5	5.2	5.5	4.06	3.85

*Caution: Middle School teacher data from Systemic Reform Survey (SRS) are based on mainly eighth grade teachers. Data from the other surveys include other grade levels.

NELS: Based on teachers in only tenth grade.
RUC: Based on teachers in ninth grade to twelfth grade.
SASS: Based on high school teachers.

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Table 16
Influence on School Policies: Elementary School

"At this School, how much actual influence do you think teachers have over policy about MATH instruction for the following?"
(1 = "no influence"; 6 = "a great deal of influence")

Surveys	SRS	SRS	SRS	SASS
States	VT	MI	CA	National
The content of inservice programs	4.60	3.70	5.25	3.69
Policies on grouping	4.60	4.70	5.63	3.49
The curriculum	5.00	4.40	5.88	3.70

"At this School, how much actual influence do you think teachers have over policy about MATH instruction for the following?"
(1 = "no influence"; 6 = "a great deal of influence")

Surveys	SRS	SRS	SRS	SASS
States	VT	MI	CA	National
The content of inservice programs	4.60	3.30	5.25	3.69
Policies on grouping	5.30	4.20	5.88	3.49
The curriculum	5.20	4.40	5.88	3.70

*Caution: Middle School teacher data from Systemic Reform Survey (SRS) are based on mainly fourth grade teachers.
Data from the other surveys include other grade levels.

SASS: Based on elementary school teachers. (No particular grades specified)

Table 17
Classroom Influence: Middle School

"How much control do you feel you have in your classroom over selecting each of the following for MATH instruction?"
(1 = "no control"; 6 = "complete control")

Surveys	SRS	SRS	SRS	NSFMQ	RUC	NELS	SASS
States	VT	MI	CI	National	6 states	National	National
Textbook/instructional materials	5.25	4.17	3.40	\	3.36	3.96	4.21
Content, topics and skills to be taught	4.75	4.00	3.60	4.13	3.84	4.19	4.33
Teaching techniques	5.25	6.00	5.60	5.59	5.41	5.57	5.44
Criteria for grading students	5.00	5.50	5.00	5.30	5.36	\	5.42

"How much control do you feel you have in your classroom over selecting each of the following for READING (WRITING) instruction?"
(1 = "no control"; 6 = "complete control")

Surveys	SRS	SRS	SRS	NELS	SASS
Subjects	Writing	Writing	Reading	English	English
States	VT	CA	MI	National	National
Textbook/instructional materials	5.3	4.4	4.8	4.09	4.4
Content, topics and skills to be taught	5.2	5.4	5.0	4.43	4.64
Teaching techniques	5.4	5.6	5.5	5.59	5.46
Criteria for grading students	5.8	5.8	4.8	\	5.43

*Caution: Middle School teacher data from Systemic Reform Survey (SRS) are based on mainly eighth grade teachers. Data from the other surveys include other grade levels.

NSFMQ: Based on teachers from fifth to eighth grade.
NELS: Based on teachers in only tenth grade.
RUC: Based on teachers in ninth grade to twelfth grade.
SASS: Based on high school teachers.

Slashes (\) represent corresponding items are not available in a particular survey.

Table 18
Classroom Influence: Elementary School

"How much control do you feel you have in your classroom over selecting each of the following for MATH instruction?"
(1 = "no control"; 6 = "complete control")

Surveys	SRS	SRS	SRS	SASS	NSFMQ
States	VT	MI	CA	National	National
Textbook/instructional materials	4.70	5.70	5.63	4.15	\
Content, topics and skills to be taught	5.00	5.60	5.38	4.37	3.94
Teaching techniques	5.70	6.00	5.88	5.35	5.35
Criteria for grading students	5.30	5.70	4.94	5.31	5.32

"How much control do you feel you have in your classroom over selecting each of the following for READING (WRITING) instruction?"
(1 = "no control"; 6 = "complete control")

Surveys	SRS	SRS	SRS	SASS
Subjects	Writing	Reading	Reading	English
States	VT	MI	CA	National
Textbook/instructional materials	4.90	5.70	5.75	4.15
Content, topics and skills to be taught	5.30	5.50	5.75	4.37
Teaching techniques	5.70	6.00	5.75	5.35
Criteria for grading students	5.30	5.70	4.88	5.32

*Caution: Elementary School teacher data from Systemic Reform Survey (SRS) are based on mainly fourth grade teachers. Data from the other surveys include other grade levels.

SASS: Based on elementary school teachers, no particular grades specified.
NSFMQ: Based on teachers from first to fourth grade.

Slashes (\) represent corresponding items are not available in a particular survey.

Table 19
Percent of Middle School Teachers Who Received a Type of Support for Professional Development in the Last Twelve Months

Math

Surveys	SRS	SRS	SRS	NELS
States	VT	MI	CA	National
None	0%	17%	20%	51%
Released time from teaching	75%	83%	80%	30%
Travel and/or per diem expenses	50%	50%	60%	18%
Stipend(s)	25%	50%	60%	9%
Professional growth credits	100%	17%	80%	20%

Reading/Writing

Surveys	SRS	SRS	SRS	NELS
Subjects	Writing	Writing	Reading	English
States	VT	CA	MI	National
None	0%	0%	0%	45%
Released time from teaching	100%	60%	100%	34%
Travel and/or per diem expenses	0%	0%	50%	15%
Stipend(s)	0%	40%	0%	8%
Professional growth credits	67%	20%	0%	24%

*Caution: Middle School teacher data from Systemic Reform Survey (SRS) are based on mainly eighth grade teachers. Data from the other surveys include other grade levels.

NELS: Based on teachers in only tenth grade.

Table 20
Percent of Elementary School Teachers Who Received a Type of Support for Professional Development in the Last Twelve Months

Math			
Surveys	SRS	SRS	SRS
States	VT	MI	CA
None	0%	40%	13%
Released time from teaching	70%	30%	75%
Travel and/or per diem expenses	50%	20%	13%
Stipend(s)	10%	30%	38%
Professional growth credits	80%	20%	13%
Reading/Writing			
Surveys	SRS	SRS	SRS
Subjects	Writing	Reading	Reading
States	VT	CA	MI
None	10%	38%	50%
Released time from teaching	30%	13%	10%
Travel and/or per diem expenses	10%	13%	0%
Stipend(s)	0%	0%	0%
Professional growth credits	30%	13%	10%

Table 21
Percent of Middle School Teachers Who Participated in a Type of Professional Development Activity during the Last Twelve Months

Math				
Surveys	SRS	SRS	SRS	NELS
States	VT	MI	CA	National
School-system sponsored workshops during the school year	50%	50%	100%	68%
School-system sponsored workshops during summer	25%	33%	40%	15%
Curriculum committee	75%	33%	40%	33%
Committee work or special assignment other than curriculum	50%	100%	60%	32%
University extension courses	25%	17%	40%	11%
College courses in EDUCATION during the school year	75%	17%	0%	11%
College courses in subject fields OTHER THAN EDUCATION during the school year	25%	17%	20%	15%
College courses in EDUCATION during the summer	75%	17%	20%	13%
College courses in subjects OTHER THAN EDUCATION during the summer	25%	17%	20%	9%
Professional growth activities sponsored by professional associations	100%	33%	100%	37%

Reading/Writing				
Surveys	SRS	SRS	SRS	NELS
Subjects	Writing	Writing	Reading	English
States	VT	CA	MI	National
School-system sponsored workshops during the school year	100%	80%	75%	75%
School-system sponsored workshops during summer	17%	40%	25%	20%
Curriculum committee	33%	40%	25%	39%
Committee work or special assignment other than curriculum	67%	60%	25%	45%
University extension courses	33%	60%	0%	13%
College courses in EDUCATION during the school year	0%	0%	0%	12%
College courses in subject fields OTHER THAN EDUCATION during the school year	33%	0%	0%	12%
College courses in EDUCATION during the summer	17%	0%	0%	11%
College courses in subjects OTHER THAN EDUCATION during the summer	0%	0%	0%	11%
Professional growth activities sponsored by professional associations	67%	40%	75%	37%

*Caution: Middle School teacher data for Systemic Reform Survey (SRS) are based on mainly eighth grade teachers.

NELS: Based on teachers in only tenth grade.

Table 22
Percent of Elementary School Teachers Who Participated in a Type of Professional Development Activity during the Last Twelve Months

Math			
Surveys	SRS	SRS	SRS
States	VT	MI	CA
School-system sponsored workshops during the school year	70%	60%	63%
School-system sponsored workshops during summer	50%	50%	75%
Curriculum committee	60%	70%	38%
Committee work or special assignment other than curriculum	40%	40%	50%
University extension courses	10%	0%	0%
College courses in EDUCATION during the school year	30%	10%	0%
College courses in subject fields OTHER THAN EDUCATION during the school year	0%	0%	0%
College courses in EDUCATION during the summer	50%	10%	13%
College courses in subjects OTHER THAN EDUCATION during the summer	10%	0%	0%
Professional growth activities sponsored by professional associations	20%	20%	25%

Reading/Writing			
Surveys	SRS	SRS	SRS
Subjects	Writing	Reading	Reading
States	VT	MI	CA
School-system sponsored workshops during the school year	20%	50%	25%
School-system sponsored workshops during summer	0%	0%	38%
Curriculum committee	20%	10%	25%
Committee work or special assignment other than curriculum	0%	10%	38%
University extension courses	0%	10%	0%
College courses in EDUCATION during the school year	20%	10%	0%
College courses in subject fields OTHER THAN EDUCATION during the school year	0%	0%	0%
College courses in EDUCATION during the summer	30%	10%	13%
College courses in subjects OTHER THAN EDUCATION during the summer	10%	0%	0%
Professional growth activities sponsored by professional associations	20%	10%	13%

Figure 1

Middle School Math Topic Emphases

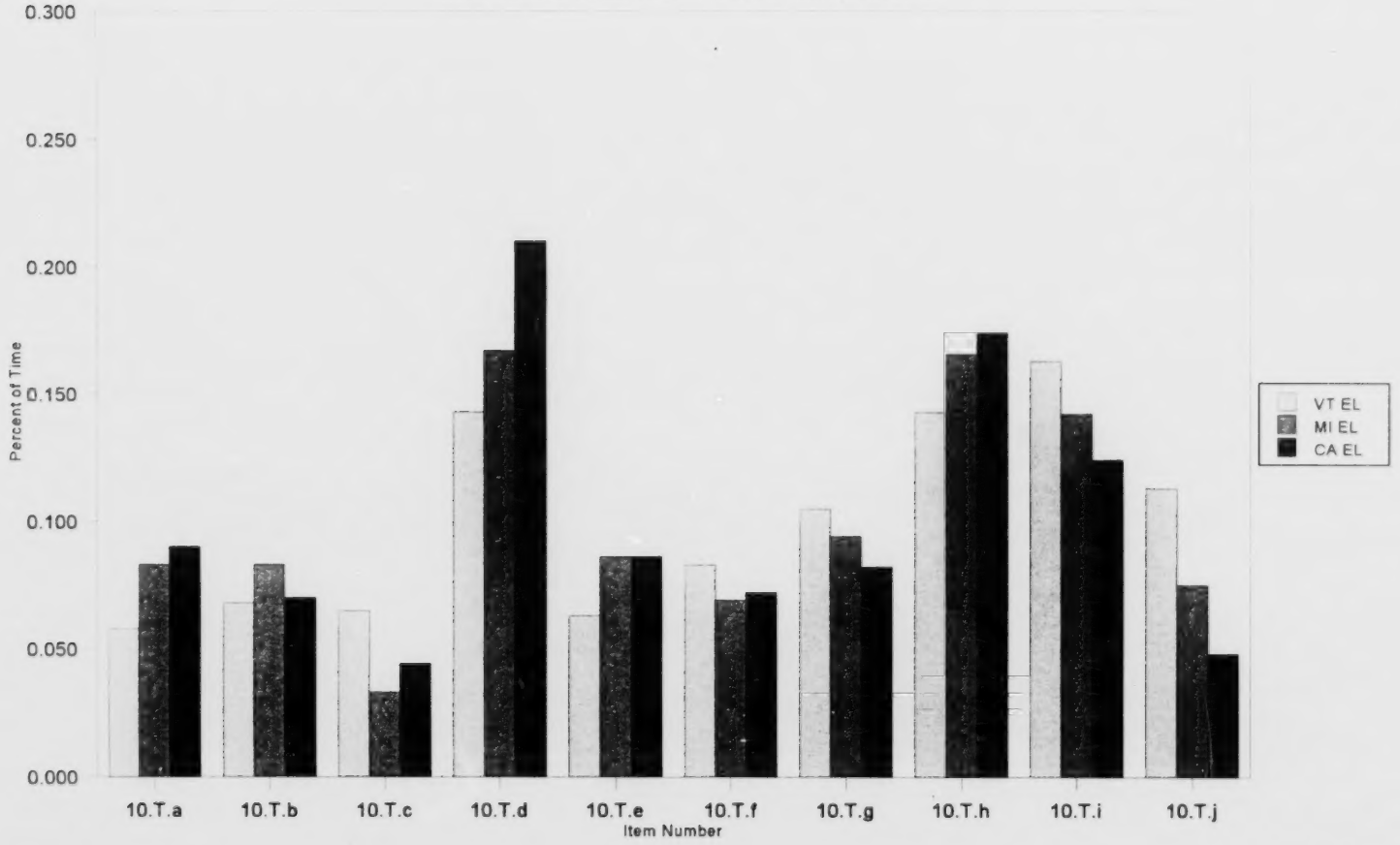
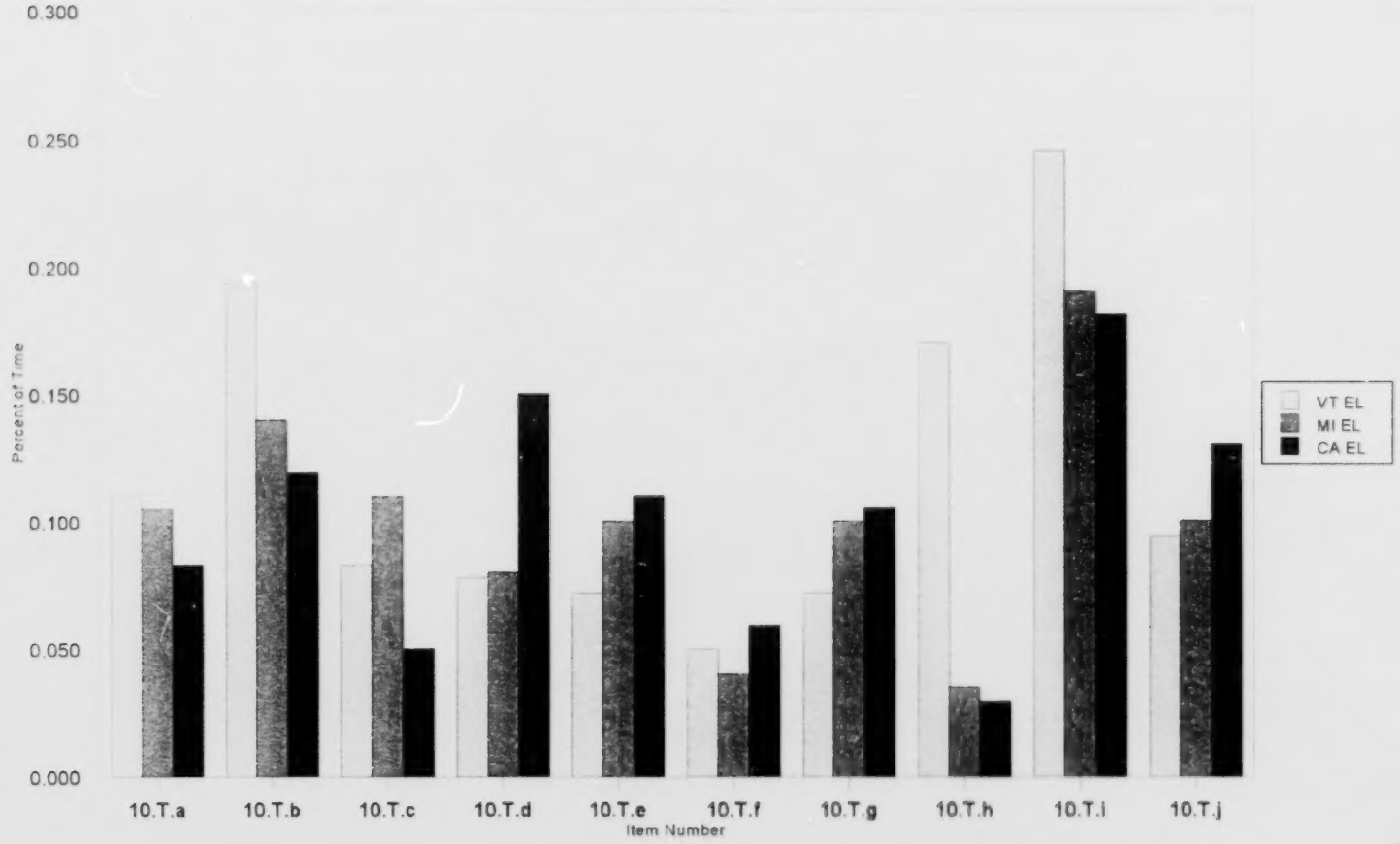


Figure 2

Elementary Math Topic Emphases



Chapter 6

Capacity Building and Systemic Reform

Having all students meet more challenging expectations for learning is a major goal of current education reform. To date reform efforts have focused primarily on articulating high standards for students and aligning other policies with these learner goals. Although some may believe that a combination of standards and assessment is sufficient to yield the desired results, most reformers are increasingly concerned about the capacity of the current education system to respond to the new expectations. Many reformers now recognize, for example, the tremendous changes the new standards demand of teachers—in what and how they teach and in their role in their classrooms and schools. These changes require teachers not only to learn new content and skills but to *un*learn previous, less effective ones. Prior research, supported by the findings of this study, has documented how difficult and protracted this change process is (e.g., Fullan, 1993; Cohen, 1990).

Yet the changes demanded of teachers are only the tip of the iceberg. If all students are to learn to new standards, administrators, teacher educators and other participants in the education of our youth must also change their roles and expectations (David, 1993). And they and teachers must do so at the very same time those roles and expectations are being defined and redefined. Indeed, what is being asked of the educational system is not simply more effective implementation of known strategies and goals but the simultaneous creation and implementation of a new conception of educational achievement and of instructional practice. Put another way, if our youth are to be prepared as complex thinkers and problem solvers, our teachers and schools must become problem solvers on a scale never before imagined. Will they be able to do so?

Educators, researchers, and policy makers are beginning to address this question and to explore different ways to enhance the ability of the system and its teachers to improve student learning. But before they can design effective policies, policy makers must determine *what* capacities are needed and what mechanisms and strategies might foster their development. The purpose of this chapter is to contribute to these fledgling discussions by suggesting a framework for thinking about the concept of capacity and capacity-building strategies and policies.

The Dimensions of Capacity

Capacity refers to the power, ability, or faculty for doing some particular thing.[7] Within the context of systemic reform, capacity is the ability of the education system to help all students meet more challenging standards. We saw in the preceding chapter that many of the teachers in our sites have begun to change their practice in the directions set out by the reforms. Yet even in these schools and districts, which were chosen because they are actively undertaking reform, teachers' instructional practices do not yet meet national standards. Why? According to our respondents, these teachers are hindered in part by their own and the system's still limited capacity to make the desired changes.

Logically, if the capacity of a system is insufficient for accomplishing a desired goal, that capacity may be increased in a variety of ways: 1) by enhancing the capabilities and improving the performance of the workers (e.g., individual teachers); 2) by adding additional resources to the system (in the forms of personnel, materials, and/or technology); 3) by restructuring the ways in which work is organized; and/or 4) by restructuring the ways in which services are delivered.

Most capacity-building strategies in education today are targeted on individual teachers and are designed to enhance their knowledge and to improve their instructional skills through the provision of workshops and university courses. This strategy is based on the propositions that professional development should focus on the growth, competence, and advancement of individual teachers; that if teachers are regularly exposed to new ideas about pedagogy and subject matter, they will improve practice on their own; and that the best source of knowledge for improving teaching is university-generated research (Corcoran, 1995). Yet in a paper commissioned for this study, Little (1993) argues that this model of capacity building—which she calls the "training model"—is incompatible with current education reforms in curriculum, assessment, the teaching profession, and the social organization of schooling. While professional development based on a training model may work to introduce "technical" aspects of reform, or to strengthen a repertoire of classroom practices, it cannot promote the necessary growth in teachers' knowledge base, nor does it expand teachers' opportunities to learn, experiment, consult, and evaluate their practice.

Our data and that of other researchers suggest that the traditional model of professional development reflects a limited conception of the dimensions of teacher capacity necessary to support and sustain instructional reform. This model also ignores the role of the school and other communities of practice in teacher learning and educational improvement. In this section we present a framework for thinking about the nature of teacher and organizational capacity in the context of educational reform. This framework is organized around three central themes supported both by prior research and by data from this study.

---

[7] *Oxford English Dictionary*, (2nd ed.) (New York: Oxford University Press, 1989).

Theme 1: Teacher Capacity Is Multidimensional and Evolving

Teachers work most directly with students, so discussions of capacity often focus on what teachers need to know and be able to do. Early investigations of the knowledge base for teaching addressed propositional knowledge and procedural knowledge and skills. Consequently, discussions of staff development dealt with the content to be learned in workshops and the methods of skills training (e.g., Joyce and Showers, 1983). More recently, scholars have broadened their attention to other areas of teacher capacity. For the purposes of this analysis, we have divided these areas in four main categories: knowledge, skills, dispositions, and views of self.

Knowledge

Teachers' ability to assist students in learning is dependent on the teachers' own knowledge base. Theorists have subdivided the required knowledge into such areas as knowledge of the subject matter, knowledge of curriculum, knowledge about students, and knowledge about general and subject-specific pedagogy (e.g., Shulman, 1986). Research has documented the influence of such knowledge on instructional practice, including both teachers' explicit propositional knowledge and the more implicit understandings and beliefs they have developed in their experience as learners and teachers (Carpenter et al., 1989; Wilson and Wineberg, 1988). Recent studies have also shown that the more complex thinking and problem solving abilities set forth in the new student standards require teachers to have a deeper and more flexible knowledge base than is either required of basic skills approaches or developed in teachers' undergraduate, preservice, or inservice education (Ball and McDiarmid, 1990; McDiarmid, Ball and Anderson, 1989).

Respondents in this study also acknowledged the importance of teacher knowledge in carrying out the reforms, though the emphasis placed on such knowledge seemed to vary. There was some indication that respondents' perceptions of the depth and type of knowledge needed varied by the level of their own understanding of the change in instructional goals, by the subject matter discussed, or by their position in the system. Our data were not sufficient to arrive at firm conclusions about this variation, however.

The following comments are typical of the varieties of knowledge teachers and others mentioned as important:

> I'd like to become more knowledgeable about this specific curricular content—this year it's world history, next year will be American history. I'm also teaching writing and literature, so I'm having to learn some new pieces of literature as well as recall the writing pieces.

> We found that teachers have got to know the science content to really do this kind of teaching.... Also, we found a big gap between who taught math and who knew math...

> We need knowledge about how students learn and develop skills. We are teaching to diverse backgrounds. This summer I will go to Michigan for a three week workshop on teaching science to diverse students.... In California there are also a number of diverse languages. You need to be knowledgeable about language and language acquisition when you become a teacher here.
>
> I've thought about the CLAS testing because I know I'm sadly uninformed about what it is specifically.... And you can't prepare students for something you're not familiar with.

Skills

Knowledge of what and how to teach must of course be combined with the skill to do so. Earlier research on both generic and holistic teaching strategies revealed fairly robust relationships between teachers' pedagogical skills and student learning, as measured by traditional outcome measures (e.g., Brophy and Good, 1986; Rosenshine, 1987). More recently, researchers are beginning to establish links between the changes in pedagogy sought by the reforms and students' performance on the more complex problems and analytical tasks (e.g., Newmann, Marks, and Gamoran 1995).

But making the far-reaching changes in instruction called for by the reforms is far from easy. While skills and knowledge interact and develop together, researchers have demonstrated a considerable gap between what teachers know or believe they should be doing in the classroom and their ability to teach in the desired ways (e.g., EEPA, 1990). Respondents in this study also noted the gap, whether it was in curriculum development (like developing open-ended problems in mathematics or designing interdisciplinary projects and units), instructional strategies (like sheltering content for English language learners or expanding their repertoire of grouping strategies), or assessment (establishing and using performance standards for the evaluation of student work). A local union leader and teacher went so far as to describe the gap as the "Grand Canyon":

> Another [barrier] is the conceptual differences between the old and new ways of doing things.... For some it's like they see the Grand Canyon—they can see the other side but they don't know how to get there. They don't know what to do next, how to teach in new ways. And you can't just do it in the summer because you can't anticipate everything. It's much more massive than that.

Dispositions

In addition to knowledge and skills, enacting reform requires having the disposition to meet new standards for student learning and to make the necessary changes in practice (Katz and Raths, 1986; National Center for Research on Teacher Education, 1988). One important disposition involves teachers' attitudes towards the subject matter. Several respondents in this study, for example, remarked that because of their own love of literature, they welcomed the move toward literature-based reading instruction or the integration of English Language arts with social studies. Attitudes toward their students, expectations for student

achievement, and attributions for student performance are also a critical component of teacher dispositions, particularly given the reform goals of high performance for all students.

But perhaps the dispositions most often mentioned as key by respondents in this study were teachers' commitment to student learning and their attitudes toward change.

> We will have to come up with a way that can help teachers that are resistant to change not feel threatened, and to realize how it can be more beneficial and exciting to their teaching.

> One barrier is the reluctance to change. There's been a significant amount of resistance at the middle school. Some of those who were very enthusiastic have been socially isolated by those opposed. But I'm hearing that a lot less now.... There's also a fear of losing control—that if they make these changes they will no longer be in control of the kids. And if this is so, it becomes a threat to my job. If it gets too noisy in the classroom, people will be on the teacher's back for it.

> The reluctance to change is a bigger factor than specifics of curriculum.

Compare the above comments with those of the middle school teacher below:

> It's easy for me to adopt change. I'm always looking for change and I'm still in this school because there is always change. If it became static, I'd leave. A lot of people here are like that.

Views of Self

Studies of teachers' attempts to change their practice also suggest that the capacity to teach in different ways is connected to teachers' views of self, to their beliefs about their role in classroom activity, and to the persona they adopt in the classroom (Floden et al., in preparation). Also critical are teachers' views of themselves as learners, including what, where, and how they will learn.

The comments below demonstrate how two teachers see the connection between their views of themselves and their teaching:

> I think I can learn from anything. For example, I went to a workshop last summer and some of the presentations were really poor, but I learned from negative example—I learned what not to do.... I also read like a crazy woman. And I'm writing—seeking to be published. I'm working on an autobiography and a novel. I go on sabbatical next year and I will spend some time trying to figure out how to pull some of that into the classroom.... So that's where I'm going. This year I'm not only a teacher of writers, I'm a writer too.

> In science my main inspiration has come from the staff. I didn't have a lot of science or math as an African American. I had received an 'A' in algebra in high school but was never encouraged to take another math course and never encouraged to take any science. This is another reason I want kids to know what they are doing and why. I wasn't excluded (from math and science) but I just didn't know, I was unaware of what I needed to succeed. People here made me a believer I could do it.

While analytically distinguishable, these dimensions of capacity—knowledge, skills, dispositions, and views of self—are interdependent and interactive. For example, a strong commitment to improve student learning may lead one teacher to seek out the new knowledge and skills she needs, thus increasing her capacity. Indeed, this pattern was characteristic of many of the teachers in the reforming schools studied here. Meanwhile, another teacher who believes that some children simply cannot learn complex mathematics, for example, may not bring the full extent of her content knowledge to bear on instructing these children. Such a disposition, coupled with a more traditional approach to mathematical content, led one of our California middle school teachers to transfer at the end of the year to a local high school, where she could teach calculus and other advanced math to a more select group of students. Finally, changes along one dimension of capacity may produce unexpected changes in another. Consider, for example, Mrs. B, an elementary teacher in California who had participated in the California Writing Project some years earlier. While Mrs. B joined the workshop to develop her knowledge and skills about teaching writing, the experience also had a dramatic impact on her view of herself as a writer and on her overall development as a professional.

> I did the Bay Area Writing Project five years ago—spent five weeks at Berkeley. Best thing I ever did! I'd always been a poor writer and I'd always thought it was because I'd had poor teaching. But I saw I could write. It opened doors for me and I became a good writer...

One last note: Our focus in this brief discussion has been on the dimensions of teacher capacity because we, like other observers, believe teachers to have the greatest and most direct impact on student learning. Yet the analytical frame described here might easily be applied to other participants in the educational enterprise, both inside and outside the system of schooling. Administrators, teacher educators, curriculum developers and others need knowledge and skills to carry out their roles in helping to ensure students can meet the challenging standards being articulated. Moreover, as Jane David argues in her paper commissioned for this study (David, 1993) the new standards for students require everyone in the educational system, not just teachers and students, to *change* their roles and relationships. As is true for teachers, this requires not only new knowledge and skills, but also positive dispositions about the need for and direction of change. It also requires a sense of themselves as learners who are capable of responding to the new conditions and goals and of performing their new roles.

Theme 2: Individual Capacity Interacts and Is Interdependent with Organizational Capacity

Individuals, of course, do not operate in a vacuum, and their ability to perform their roles and accomplish the goals set out by the standards depends not only on their own capacity but also on that of the other educators with whom they work. On the most basic level, the reason for teachers' dependence on others for success is quite obvious. Students will interact with many people in the course of their schooling, each of whom may promote or hinder progress toward desired learning goals. At the minimum, most students change teachers at the end of each academic year, and many—especially those in middle and high school—are instructed by several teachers in the course of a single day. Student learning is also influenced by the culture of the school and community and by the other students with whom the child interacts. In such a situation, the influence of a single teacher on students' learning—no matter how able or committed that teacher may be—is necessarily limited. One middle school math teacher in California expressed clearly the frustration that derives from this limitation:

> My goal is to have all students ready to take algebra in the ninth grade.... About half the kids are ready when they leave here; some may never be. And that is really not because of me. Sometimes it's frustrating because I'm only one year in eight. Sometimes I feel like I make no difference at all. Generally, the kids who test well at the beginning of the year will test well at the end...

Even at this most basic level, it is easy to see how the ability of a given teacher to help her students reach the standards may be improved as the capacity of others in the school or district increases. Yet the relationship between teacher capacity and organizational or systemic capacity is at once more complex and more direct than the multiple influences on students would suggest.

Communities of Practice

Just as student learning is influenced by students' participation in the larger school community, so is that of their teachers. Teacher capacity develops and is realized not only through independent study and effort but through interaction with others. Research on the contexts of teaching finds that teachers' conceptions of practice and what they actually do in the classroom are shaped in part by the nested and sometimes overlapping contexts in which they work and learn (McLaughlin and Talbert).

An important aspect of these contexts are the communities of practice formed by teachers' relationships with other professionals inside and outside the school. These professional communities may be institutionalized (as in California's League of Middle Schools) or more fluid (as in groups that collaborate on more short-term projects such a the scoring of assessments in Vermont or the evaluation and selection of texts in California) (Darling-Hammond and McLaughlin, 1995). As in the preceding examples, some of the important communities of practice exist outside the school, or even outside the school system

as such. Many of our respondents in Vermont and California, for example, pointed to inter-school, cross-district or national subject matter networks such as the Urban Math Coalition, Project 2061, or the Writing Project, as critical avenues for their development and support.

Teacher Capacity and the School Context

As important as these outside networks and relationships are, however, our data and those of other researchers suggest that it may be teachers' immediate daily context—the school or sub-unit of the school—that has the most salient influence on teachers' capacity and practice. The vast majority of teachers in this study, for example, report that they turn primarily to their school colleagues for assistance and support (see Chapter 5). McLaughlin and her colleagues (e.g., see McLaughlin, 1993) found a strong influence of professional communities not only at the school level but also at the departmental level within schools. Indeed, among the high school teachers they surveyed and interviewed, "the department was the professional community of greatest significance to teachers' norms of practice, conceptions of task, attitudes toward teaching and students" (p. 92). Collegial departments tended to have norms of innovation and learning; teachers in these departments were enthusiastic, committed to teaching *all* students, and worked together to devise strategies to help all students succeed. By contrast, teachers in less collaborative settings were less likely to innovate, had lower expectations for students, and reported less support for professional learning. Our data suggest that similar differences may exist among interdisciplinary families or teams in schools that have moved to this structure as well.

Our data also indicate that there are a number of ways in which the capacity of the individual teacher interacts with and is dependent upon the capacity of the school. Several respondents pointed out, for example, that the ability of individual teachers to make use of the knowledge and skills they bring to the teaching situation is affected by the receptivity and support of colleagues in the school. For this reason, some of the Subject Matter Projects (SMPs) in California have begun recruiting teams of teachers from schools to participate in the summer workshops. "Otherwise there is no real effect because teachers are alone—and lonely—in the school." One teacher expressed the importance of this support by describing her experience when she transferred to a less reform-oriented school:

> I left here for one year to be a resource teacher at [another school in the district,] I got tired of always begging for money, always fundraising. The other school had a lot of resources because of desegregation. There, the teachers were having things given to them—like they had the writing project at the school and were paid to take it! But you have to internalize it. I spent a year trying to convince the folks there, but they had no beliefs in what they were doing, no beliefs in the kids. They don't even like each other that much.... And one little person cannot change a school. The teachers have to believe in making the changes. They have to seek out information, take classes, and then be able to implement them. But if they don't have the support to implement them, it just won't happen.

While this teacher stressed that one teacher could not effect change alone, and others spoke to the importance of having a "critical mass" of reform-minded teachers, many respondents also noted that a single inspirational and knowledgeable leader may be instrumental for eventually creating that critical mass of support for change.

Just as low capacity schools may prevent teachers from making full use of their existing knowledge and skills, schools that are high in capacity—or at least open to change—can provide additional avenues for individual growth and learning as the community of teachers share ideas, model effective practices, and support each other in their efforts to solve problems of practice. Moreover, the solutions that develop from such collaboration are likely to be more effective that anything a single teacher working alone might devise. The old adage "two heads are better than one" might apply well here. More to the point, one might argue that the capacity of the school (or organizational unit) is greater than the sum of the capacities of its members taken individually. Examples of teachers using collective wisdom to solve problems abound in these data—everything from designing curriculum and developing new forms of assessment and evaluation to meeting in families to address specific needs of specific children. Typical comments included the following:

> We've spent a lot of time working together to develop the challenges.... Because we don't have a lot of resources, we use each other and resources from the community.... We work together mainly in developmental work groups because we will have a better idea of what is appropriate for students in the range of ages around those we usually teach.

> In the villages [middle school families] the teachers work closely with one another, which has led us to be much more effective in student intervention.

This discussion on the interdependence of organizational and individual capacity suggests that reform strategies should pay attention not only to promoting professional development of individual teachers but to building the capacity of schools and other educational organizations as well. Like that of individuals, however, the capacity of organizations consists of a number of complex and interdependent dimensions.

Dimensions of Organizational Capacity

Five dimensions of organizational capacity emerge from analysis of data from these reforming schools. Development along any of these dimensions may contribute to an increased capacity on the part of individual school personnel. We outline the dimensions of school capacity below, along with representative comments from respondents demonstrating their importance to teachers.

Vision and Leadership. A school/departmental vision or collective sense of purpose has been identified as an important aspect of successful and improving schools since the effective schools literature of the 1970s (e.g., see Edmonds, 1979 or Purkey and Smith, 1983; for more recent discussion see, for example, McLaughlin, 1993). The importance of school

mission was a recurring theme among respondents in this study—particularly those from the four California schools, which were engaged in the most far-reaching changes in curriculum and instruction in this sample. The following comment from one of those teachers was characteristic of this theme.

> Another need is having time to create a vision of what you are trying to do as a school.... Before you make changes, it's important to see a vision of where you are going. Then you can try things [to get there].

Not all schools in this study had well formed visions. For those that did, the particular form of the visions varied—from interdisciplinary project-based curricula to multi-age two-way bilingual education to detracking and performance-based assessment to some combination thereof. But by and large, the visions—either of the school as a whole or of the relevant sub-unit within it—incorporated a focus on curriculum and instruction, improved achievement for all students, and teacher responsibility for student learning. Respondents also emphasized the importance of leadership for helping to articulate the vision and mobilize the organization to support it. These themes mirror those at other levels of the system, discussed in Chapter 4.

Collective Commitment and Cultural Norms to Realize the Vision. Many American schools have a vision or mission statement, some of them quite eloquent. But a vision without the commitment to work towards its realization is unlikely to yield much progress. In the most actively reforming schools in this sample, we found that not only were individual teachers committed to the goals, but there was also a sense of collective commitment and responsibility for students in that school or family unit. One indication of this was that responses from teachers in these schools began with "we" as often as with "I." Another was in the way that they talked about their students.

> You have to have the whole school commitment. Also, one thing you have to change is the idea the 'these are *my* students.' When they go to other projects, you lose control over your kids' learning. Some teachers have a hard time with this. This has been one of our hardest leaps.

These schools went beyond general commitment and responsibility, however. In addition, they displayed a set of cultural norms that stressed on-going reflection and improvement. They were also developing and using specific tools and processes to help them evaluate progress toward the learning goals, with the intention that these processes would become institutionalized.

> The articulation (of the English curriculum) is a work in progress. This school never thinks anything is final, formed in cement. Things can always be improved, and if it's not effective, we may chuck it.... This year we started focussing more on reading. Our scores are low. We're not content with our writing either. We will not stop at anything. Our main thing here is what's in the best interest for the kids...

> [Changing to process writing] is an incredible change. A lot of teachers still haven't made that change, even here. But more of them have here. It's because we are immersed in a culture; it's how we do things. Kids in my [7th grade] class will say, we used to do that in Miss L's class [6th grade]. The kids learn through this consistency, and it's part of a bigger picture.

> Teachers need more time to plan, talk to each other, time to assess what they've done, write down what works and what doesn't. We're doing that with the projects. It's really exhausting. The inservices for 2061 have mostly been in documentation, so they're related to assessment. I'm having a hard time with it. I'm getting there but it's slow.

> We are just learning the 1274 protocol[8] this year. The research and development team is learning the protocol and will help others in the school to use it. It just hit me a few weeks ago *why* we are using the protocol—it's a way to focus on student work. I didn't really see that before. The 1274 conference will be a chance to practice the protocol and then we'll teach it to the staff. Then it will just be something that you do.

Knowledge or Access to Knowledge. Just as individual teachers need knowledge, so does the collection of teachers at the school or of other educators in other units of the system. Where knowledge does not exist within the organization, it is important for members to know where to look outside for what they need. Several respondents stressed the relationship between the needed knowledge and the vision of the learning goals. One such respondent was the math department chair of one of the Michigan middle schools:

> I feel our department is close knit. We have strong agreement as to what the curriculum should be and where it should go. All of us have been involved in writing the district [math] outcomes. We have been active in MCTM in terms of professional literature, reading what is being published. We have written a grant, attended math conferences and workshops, are part of the Calhoun County math network. We discuss math issues such as MEAP assessment, outcomes, teaching strategies.

By contrast, when there is disagreement about the kinds of knowledge needed in a school, problems may arise. Compare the above statement with that of a California middle school math teacher below:

> [The principal] has hired elementary [school] teachers to replace the ones who have left. This is the biggest change. They are better at the team player idea; they take a

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[8] The protocol is a set of questions to guide a school or team's self study and evaluation, based on the criteria set up by the school and focused on an analysis of student work in relation to those criteria. The protocol was designed to develop habits and a culture of inquiry within the restructuring schools.

broader outlook, are not subject-oriented. Maybe that's what middle school needs, but are we compromising expertise for broadness?... For example, for the past five years, there have been only four consistent math teachers, and next year there will be three. [The principal] gave one math section to three teachers each—a P.E. teacher, a social studies teacher, and an opportunity teacher. I had to do all the training, planning, and lesson plans.

Organizational Structures and Management Conducive to Learning and Improvement. Over the last decade, reformers have given considerable attention to the barriers traditional school structures may present to improving educational outcomes. The primary focus of discussion and policy in this area has been on "school restructuring," which can entail changes in the way that teaching and learning occur, changes in the school structure, working conditions, and decision-making processes within schools, and/or changes in the governance structure within which schools operate (Elmore, 1990). Some researchers have noted commonalities in the organization and management among "high involvement," actively reforming schools[9] and have argued that such organizational structures are important for the success of school reform (e.g., Mohrman and Lawler, forthcoming 1996; Darling-Hammond, forthcoming 1996). Others, however, question, how and to what extent structural changes in schools actually affect what happens in the classroom (Peterson, McCarthey, and Elmore, forthcoming, 1995; Szabo, forthcoming).

Whether structural changes might produce instructional change or just help it along, informants in this study seemed to see a link between organizational structure and reform goals. At the far end of the restructuring continuum, two of the elementary schools were challenging the traditional graded structure by grouping students into developmental multi-age classes (e.g., grades K-3 or 1-3, 4-6). Meanwhile, five of the six middle/junior high schools were in the process of changing their structure to conform more closely with the reform model of middle schools—that is, they were organizing into small teams of teachers responsible for a defined group of students, developing more interdisciplinary teaching, scheduling larger blocks of class time, etc. Several of the study schools also had highly democratic or consensus-based decision-making processes, and most were reconfiguring schedules to allow teachers common planning time for collaboration. On the whole, teachers saw these changes as facilitating their ability to improve student learning.

We've come a long ways. We've gone from a traditional junior high school—single periods, single teacher, single subject—to a village structure where we've gone so far as to double core. So, fewer student contacts. We have much more account-

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[9] Mohrman and Lawler's framework, for example, argues that management structures should see to increase the presence of four "resources" in the school: "*information* about the performance, strategy, mission and goals of the organization as well as ongoing task feedback...*knowledge and skills* that enable employees to understand and contribute to the improvement of organizational performance... *power* to make decisions that influence organizational practices, policies and directions...*rewards* based on the performance of the organization and the capabilities of individuals." (Mohrman and Lawler, forthcoming 1996).

> ability and feedback, instant feedback. It doesn't take until Christmas to spot kids who are at risk because we have much more collaborative instruction and much more true thematic teaching. We've talked about it in the past, but under this structure, it's actually starting to happen now.
>
> There is no way we could do the curriculum stuff were it not for the structure we have. The staff is always talking to each other.
>
> I like the family structure. Sometimes we have dysfunctional families, but mine seems to get along pretty well. You get a better perspective on the kids. We get together regularly to talk about problems. We meet more regularly with the parents. We have a common meeting and planning time, and we have a set group of kids. I like that.

Structural changes in and of themselves were not a goal for these teachers, however. Instead, structure followed purpose ("It's not really structure so much—the structure followed the curriculum"). And if a new structure did not prove beneficial for improving teaching and learning, they were ready to revisit it and consider other options. A prime example of this was the tension discussed in Chapter 4 between the interdisciplinary team structure and that of departments in the middle school.

Resources. A final dimension of organizational capacity suggested by these data is resources, some of which have been discussed previously under other categories. Time was far and away the resource seen as most essential by respondents in this study—time for teachers to meet together to plan, reflect, and learn from their practice; time for individuals to pursue professional development opportunities, etc. Because fiscal constraints were substantial in all our sites, this additional time was usually derived from some form of restructuring rather than from additional monies. Personnel was another key resource (see knowledge and skills, above), especially in the case of highly diverse student bodies with special needs, such as limited English proficient students who needed access to bilingual personnel with whom they could communicate.

Material resources, while not targeted with the same priority as other aspects of organizational capacity, were also seen as important. Teachers especially emphasized the need for instructional materials that reflect the emerging standards, a resource in short supply everywhere. But for some of our schools the needs were more basic, including the very basic materials many schools take for granted, as well as access to social and health services regarded as essential for students in greatest need.

> I really like what the math framework says: thinking critically, learning with materials. But it's just a book. Teachers don't have the resources they need. I went without an overhead for one year. My kids don't have rulers to use—we have to use pieces of paper. The priorities are not straight.

Theme 3: Organizational Capacity, like Individual Capacity, Can Be Galvanized and Nurtured Through Infusion of Ideas and Perspectives from Outside its Ranks.

Decades of research and practice have confirmed that the heart of educational reform resides in teachers and schools. Grand visions, mandates, even additional resources will have little impact unless those at the school site "buy-in" and act to effect the desired changes. At the same time, insularity at the school site or abdication of responsibility by policy makers is unlikely to produce much improvement either. Schools need external input and assistance to move significantly beyond current practice. As McLaughlin (1993) points out, "Strong professional communities, by themselves, are not always a good thing. Shared beliefs can support shared delusions about the merit or function of instructional orthodoxies or entrenched routines. This collective agreement can generate rigidity about practice and a 'one best way' mentality that resists change or serious reflection (p.95)."

We found in each of these reforming sites, and at all levels of the system, a rich infusion of ideas from outside the immediate organizational context, ideas that provided inspiration, insights, and alternatives to the individuals and groups involved in the reforms. In some cases the relevant ideas were focused on process and structure or on generic philosophies about instruction. For example, the notion of the family structures in middle school, the use of portfolios and performance-based assessment, and the concept of teacher as coach would all seem to fit this category. In other cases, the ideas brought in were directly related to content and content-based instruction. Use of the NCTM standards in mathematics and literature-based reading instruction and process writing approaches in English language arts represent these content-oriented influences. What is significant here is that in no case in this study did these ideas emerge spontaneously out of instructional practice at the school site.

One could argue, of course, that these ideas are simply "in the air" as they have become part of the general professional conversation about instruction and reform. Thus, the similarity among the three states in terms of their reform direction in the areas of mathematics and language arts can be attributed to the more general influence of national trends in disciplinary associations and other professional endeavors. Teachers and local administrators were also often part of this professional sea change, having become swept into it on any one of a number of currents, including individual study, attendance at meetings, participation in specific project, and so forth.

Our data suggest, however, that for these reform ideas to take hold in a school or district, there needs to be a specific conduit—one that not only brings in the ideas but helps to link them to the specific realities of that specific context. In every single case, respondents could point to an individual or group of individuals who served as such a conduit. In the two Vermont districts, for example, it was the curriculum coordinator who initiated the reforms in mathematics, as it had been the Vermont Writing Project that had brought in process writing some years earlier. The curriculum coordinator worked as an individual outside the schools to meet directly with the teachers primarily responsible for the portfolio assessment

in their schools. Curriculum coordinators and other outside individuals played similar roles in the other districts in this study. In other instances, change came about when an individual in the school attended a conference or became engaged in a project and brought the ideas from that work back into the school itself. This was the case in the junior high in one California district, for example, where the principal attended a conference of the California League of Middle Schools, became intellectually engaged in the model of the middle school, and then initiated the conversion of the junior high to reflect this model.

In the examples above, the external influence provided the *initial* impetus or direction of the reform. However, the four California schools and the Professional Development School (PDS) in Michigan suggest that the usefulness of external perspectives extends well beyond the initial stages of reform. These five schools were by far the most actively reforming *organizations* in this study. And in each case, respondents pointed to the significance of on-going, systematic, and focused input into their reform efforts from an outside source.

In the Michigan PDS and one of the California elementary schools, for example, the local university had developed a long-standing partnership with the school. University personnel met regularly with the staff or groups of teachers to assist in their planning, to model effective practice, and to foster evaluation and reflection on that practice. A similar situation existed in the CA2 middle school through an inter-segmental program (ISP) of the University of California (UC). Coaches had worked with staff at this school for a period of over eight years, engaging teachers in curriculum development, assessment, and instructional improvement across grades and departments, consistent with the California frameworks in math and language arts.

The other two schools were engaged in specific reform movements and receiving coaching as part of those efforts. The elementary school in CA2 enjoyed on-going assistance as part of Project 2061, through the district-based Project 2061 network and through a project consultant who worked with the staff specifically in the area of documentation. Meanwhile, one of the CA grade level networks, the California League of Middle Schools, provided consistent support and direction for the other middle school, which regularly sent teams of teachers and administrators to its conferences. This school also benefitted from its involvement in California's restructuring initiative (SB 1274) and the on-going coaching that accompanied that involvement.

In each of these schools the input from outside sources provided additional perspectives on the practices and progress of the schools that would not be available by relying solely on internal staff. Respondents attributed the usefulness of this input to the fact that it was consistent over time and that it was site-based, professional, and focused on the reform objectives set out by the school. Although the particular relationship between external influences and the school community took different forms in each of the schools, they all seemed to reflect what Huberman has termed an "open collective cycle" of professional development. In this model, the collaboration of a group of teachers—generally across schools but conceivably within the same school—is aided by periodic conceptual inputs and

consultation from external sources. According to Huberman (1995), the open collective cycle provides opportunity for individuals to develop heightened degrees of professional competence through the availability of "stimulation, challenge, and feedback about one's performance, along with support for efforts to acquire new skills" (p. 218). According to our respondents, such would seem to be an apt description of the coaching relationships in each of these five schools.

Systemic Reform as Capacity Building

How does the framework discussed above relate to the systemic, standards-based reform in these three states?

In theory, of course, systemic reform is posited as a means of providing top-down, systemwide support for bottom-up instructional improvement in classrooms and schools. A primary aspect of this support is building the capacity of local school people to initiate and sustain reform efforts directed towards more challenging student learning. Systemic reform strategies derived in part from criticisms that the top-down mandates of the 1980s were not having the desired impact on classroom instruction because fragmented and contradictory policies diverted teachers' attention and provided little or no support for the type of professional learning necessary. This same fragmentation, it was argued, made it difficult to sustain or spread the very promising reforms taking shape in individual schools or groups of schools. A more systemic approach, involving clear and consistent vision, a coherent set of state policies aligned with that vision, and a restructured governance system to devolve instructional authority to those closest to instruction, could provide the focus needed as well as multiple and reinforcing opportunities for teachers and other educators (and the general public) to engage in conversation about desired outcomes, to develop the knowledge and skills to move towards those outcomes, and to evaluate and improve practice. All this was conceived as a means to increase the capacity of the system to assist all children in reaching challenging standards of achievement.

The literature advocating systemic reform and our study suggest several potential avenues and specific tools for building capacity within the broader systemic reform strategies. Most of these will be apparent from our discussion of these states' efforts in this and previous chapters. We therefore review them only briefly here and then use two extended examples across the three states to explore both the promise and the limitations of these tools in practice.

Systemic Tools to Enhance Capacity

Our analysis suggests that the system and its various organizations have five central avenues for building the capacity of its members and sub-units. These are: articulating a vision for reform, providing instructional guidance toward the realization of that vision, restructuring governance and organizational structures so as to facilitate learning and more effective delivery of services, providing needed resources, and establishing evaluation and accountability mechanisms that provide incentives for improvement while addressing problems and barriers.

Articulating a Reform Vision

State and local strategies with regard to establishing a vision for reform have been discussed in some detail in Chapter 4 of this report, while the importance of vision as a central component of organizational capacity was outlined in the previous section of this chapter. As it becomes established, this vision, whether at the school or other levels of the system, can provide the frame for both creating and evaluating all aspects of the reform.

In addition, we saw examples of how the *process* of establishing a common vision can itself be a capacity building endeavor. The public forums and other opportunities for engagement in and comment on the Common Core in Vermont, for example, build knowledge about and garner support for the reforms. They also foster partnerships with various stakeholders that can serve to increase resources available for the reform efforts. At the school level, the process of generating a unifying vision can be an intense learning experience for teachers and others.

> We've had to learn about curriculum.... When restructuring came on board, we [set up a group planning process] to look at the curriculum. We looked at the historical philosophy of the school—what it was originally, what it is now, what we want to keep, where we want to be in ten years. For us it was a wonderful thing to be able to sit and talk with one another. We recently had a retreat to extend this...
>
> We looked at different models. [One of our teachers] is on the district team for project 2061 and she was bringing back a lot of information on that.... We also looked at Central Park East and some other models. We invited the parents to participate, and a few came.... The project learning blocks [the basis for our curriculum] are based on the 2061 model We wrote a 1274 [restructuring] proposal but didn't the grant. But we've implemented it anyway because we believe in the vision.

Instructional Guidance

A central feature of systemic reform strategies is the development of a coherent system of instructional guidance, which at the state level may include such elements as curriculum frameworks, instructional materials, professional development activities, and assessments, all consistent with and reinforcing of the reform vision. (See Chapters 1 and 4.) Ideally, such

instructional guidance promotes capacity in two central ways. On the one hand it provides concrete tools for teachers, schools, and districts to use as resources as they construct their curriculum, design instructional strategies, promote professional development, and evaluate progress. Examples of such instructional guidance were plentiful in these data. At the state level they included the frameworks in California and the Essential Goals and Objectives in Michigan, replacement units and textbook adoption criteria in California, and the state assessments in all three states. These and other state activities as well as district level counterparts are discussed in more detail in chapters 3 and 4 of this volume.

In addition to their direct use as resources, these tools can also provide additional opportunities for professional learning. This learning may come directly through activities explicitly designated as professional development, such as the Subject Matter Projects in California, local and state networks of teachers and schools in California and Vermont, and workshops, conferences and local staff development in all three states. Professional learning may also be promoted indirectly in the development and use of other aspects of instructional guidance. For example, teachers engaged in the scoring of state performance assessments in California and Vermont report these scoring activities provide significant learning as do teachers involved in curriculum or textbook committees of their local districts and schools.

Moreover, by all reports, the coherence among the various aspects of professional guidance enhances both their direct effectiveness and their usefulness as avenues for professional learning while lack of coherence tends to undermine any contribution to capacity building (see Chapter 4).

Restructured Governance

By giving teachers and schools discretion over decisions relevant to instruction, the restructuring components of systemic reform can enable educators to organize themselves in ways to increase their ability to address the specific needs of their students, move toward achieving the standards, and provide opportunities for collaboration and learning among educational personnel. Examples of such restructuring are discussed in the previous section of this chapter.

Evaluation and Accountability

To the extent that accountability structures are consistent with the reform goals, they can serve to further focus attention on the attainment of those goals as well as provide useful information on weaknesses that need to be addressed. Several schools in the Michigan and California samples, for example, had used aggregate student scores on state assessments, which were publicly reported, to target specific content areas for further improvement.

In addition, the very processes and mechanisms used for accountability can be designed to promote reflection and facilitate learning on the part of educational personnel. A prime example of this capacity building use of accountability can be seen in the "1274 protocol" developed and used by the schools in the restructuring initiative in California. As a state funded endeavor, evaluation of progress is a requirement of the SB 1274 initiative.

Recognizing that evaluation is often a meaningless formality for school staff, leaders in this initiative strove to design the process "so there was a danger people might learn something from it." The following excerpted comments from the state director responsible for this initiative describe the rationale and use of this instrument. The approach represents a new way of doing business for the state and for the schools, one which places capacity at the center.

> Learning and change need to be part of the organization on a day to day basis.... [In 1274] we are working from criteria to create a new set of habits. In order to have embedded learning in the system, we have to change habits. The old habits generally are the implementation of fixed solutions. The alternative is to have criteria about what a good solution would look like, and these criteria focus attention on student work...
>
> Our hypothesis is that working from criteria doesn't work unless the criteria are internalized. The criteria can't just be a fat book. The real criteria are what's in people's heads. Keep it simple, even cryptic. Force the school communities to define their own constructivist notion of working from criteria...
>
> In the protocol we invented a sort of end-of-the-year performance assessment [for 1274 schools.] It's really a structured conversation at the school around what are you doing, what are the kids doing, and what are they learning?... To do the protocol, you have to look at student work.... It's a chance [for us] to 'peek in' on the conversation about restructuring. It's a way of doing business, a new culture, rather than the old one of 'fixed solutions.' It could be a way to learn from mistakes, open up schools for commentary.

It is important to note the modal *could* in the final sentence of the excerpt above. This respondent went on to point out that, while the protocol is a very promising tool for capacity building at the school, it is not guaranteed that it will be used in this way. An example of an unintended and "negative use," she said, was the way one principal employed the protocol as an instrument for individual teacher evaluation.

A Tool Is Only as Good as its Use

This last observation leads to a central finding of this study. On the one hand, data from these twelve schools across six districts in three states provide numerous examples of the capacity building tools theoretically inherent in systemic reform strategies. Moreover, the claim that the effectiveness of these tools is enhanced and perhaps dependent upon the degree of coherence among them would seem to be supported by the respondents in this investigation (see Chapter 4). On the other hand, however, the apparent effectiveness of these tools for building systemic capacity seems to be dependent on the degree to which they

are explicitly designed and used to foster learning among individuals and organizations within and around the system. We illustrate this last point through two extended examples of instructional guidance: state assessments and professional development.

Using State Assessment to Enhance Capacity

Following the lead of the California respondent quoted above, we begin by considering the "criteria for what a good solution would look like"—in this case, what it would look like to use state assessment as an instrument for building capacity? We do so through the example of a school in our sample that did indeed use the assessment in this way. A middle school in a large urban district, this site was reorganized a decade ago in response to a court desegregation order. As a consequence of that order, it has received targeted assistance from an intersegmental professional development program sponsored by the local UC campus. The coaches from this program have helped school personnel use both the frameworks and the state assessment as tools for learning and instructional improvement.

The staff have used the state assessment in three main ways to foster capacity at the building level.

One use of the assessment was as a guide for curriculum development. Along with the frameworks, for example, CLAS was the main tool used by the English department to design its curriculum articulation to be used by all the families across the three grades (6,7,8). At the time of our data collection, a similar process was beginning in the math department as part of the Program Quality Review of the state School Improvement Program. CLAS was also providing useful insight into that process as well.

> We place a strong emphasis on knowing all eight of the CLAS writing types and being exposed to different types of writing—poetry, scripts, articles, speeches. To know and understand the writing process—to understand writing *as a process*...

> We use the frameworks and the CLAS test to map the styles of writing onto the grades—at which grades to introduce the styles, when to reinforce them, when they should reach mastery. For example, observation writing is difficult at grade 6 so we wait on that. Evaluation writing we start in sixth and then reinforce in seventh...

The math department in its preparation for giving CLAS discovered that they were not sufficiently preparing students in probability and statistics, one of the strands of the framework and an area assessed on CLAS. They were beginning to discuss how and when they might incorporate probability into the mathematics curriculum.

A second use of CLAS was to help develop pedagogical skills and improve instruction among the teachers in the school. "The CLAS test is a way of getting people to do more cooperative work and to teach in certain ways." For example, because CLAS incorporated open-ended mathematics problems, the eighth grade teachers (who would be giving CLAS to their students) were receiving assistance and modeling in the development and use of open-

ended tasks for their students. They were thus able not only to help prepare their students for the assessment but to incorporate such tasks as a regular aspect of their instruction. They also shared these tasks and exemplar student responses with other math teachers in the department meeting observed during this study. Meanwhile, as a result of the articulation of the English language arts curriculum and the assessment, teachers in the English department were able to identify areas of the curriculum (like poetry) that weren't being addressed by some of the teachers and families. These areas were targeted for professional development, which led to a strengthening of instruction in the desired areas throughout the school.

> For example, some [of the families] were not covering poetry.... What came out was that some teachers said 'I don't teach poetry (for example) because I don't understand it, don't know how to teach it.' So we did inservice on this.... Teachers who were strong in poetry teaching share with others how they did it. Teachers are also able to observe other teachers. [Our coach] is available to model lessons, and we have discussions about strategy.... Because of that, people are more comfortable with poetry; it's being taught now. We know this because when the students get to us [in the eighth grade] they know about personification and other aspects of poetry.

Finally, in this school, CLAS and preparation for CLAS[10] had helped to generate a results orientation focused on student work. With the assistance of their coaches, the teachers had developed a pre- and post-test in writing and, more recently, in mathematics, given to all students at the beginning and then at end of every school year. Each year the writing prompt focused on one of the writing types assessed by CLAS and included in the curriculum articulation at each grade. Results from the pre- and post- test allowed the teachers to see growth, while the exercise also familiarized the students with the format and content of the state assessment they were to be given in grade 8. Results from this school-based process were then validated by the official CLAS results released during data collection for this study:

> The CLAS scores that were released this year were generally very low. Two exceptions were mentioned in the newspaper article. One was [this school]. There were no scores of 6, but 23 percent were at a level 5 in writing. This was on an equal par with [the academic magnet high school].... Anyhow, the scores show that we are doing some things right here. We can take ordinary kids and help them achieve.

The scores in reading were not as high, so teachers were targeting this area as a major focus for improvement.

But this school-based assessment process, modeled on the state assessment, did more than provide evaluation information and test preparation. It also promoted the discussion of

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[10] Note: the process began with the CAP test, the precursor to CLAS, and then continued with CLAS.

standards throughout the school and provided concrete professional development for performance-based assessment.

> The schoolwide discussion of standards comes indirectly from CLAS. It has helped my teaching by focusing me on certain standards.... I really support the schoolwide discussion of standards and rubrics.... Within a school there can be tremendous variation. Teachers are influenced by the teachers they had. The expectations their teachers had of them will influence the expectations they have of their students.... In the schoolwide discussions we look at 500 essays and decide what's a 6 or a 5 and so forth. This has been going on at this school since I started. Everyone on the faculty is invited and gets paid to score. Some who might not do it otherwise come because of the pay, so the money is important. We do it after school and in the evenings.

In the previous section of this chapter we outlined a framework for describing teacher and school capacity. Using that framework, we can analyze the ways in which CLAS was used by this school as an avenue for capacity building. At the building level, it was clearly a vehicle for *clarifying the vision*, both in terms of the curriculum goals and in terms of the standards of performance expected of the students. It was also used—through the department meetings, schoolwide pre- and post-testing, and targeted professional development activities—as an avenue for *increasing teacher knowledge and pedagogical skills*. Finally, it contributed to *building a school culture focused on improving student learning*. To this end, CLAS and its mock assessments provided concrete measures of performance on which to judge progress and identify areas for improvement. Also, the coherence of the assessment with the learning goals of the school helped to *promote teacher dispositions* receptive to standards and to the change process.

It is important to note, however, that this school was able to make such extended use of the state assessment for capacity building only with the assistance of their coaches from the UC program. Without this additional guidance it would have been unlikely that the state assessment would have had such a positive impact on change at this site.

State Assessment and Capacity in Three States

This raises the question of the extent to which and how state assessments in these three states facilitated capacity building along the lines observed in this school.

Vermont. In Vermont, the portfolio assessment is seen and used as an expression of the statewide vision of reform. One important aspect of this is that the assessment is intended to put *results* at the forefront of reform effort, while leaving teachers and schools to decide how they will get there. In this respect, it models the theory of change underlying much of the reform in that state (see Chapter 3). For the teachers whose students compile the portfolios (grades 4 and 8), the assessment has also been an opportunity to learn about the expected

outcomes in writing and in math. This has been particularly important in math because the goals in this area are new for most teachers.

> The reform I'm most familiar with is the portfolios, which I think has significantly influenced my math and writing instruction.
>
> [Portfolios] are the state's way to get teachers to change, and teachers have griped. But the portfolios are in place much better. The program was [initially] disjointed and teachers felt it was imposed on them.... But it's an effective way to get teachers to change and I embrace the NCTM standards.... I might not have done it otherwise.

To foster teacher learning in connection with the portfolio assessment, the state has sponsored professional development through workshops and networking.

> Math in the portfolio assessment was so totally new to me that I really needed inservice work. In the first year of the portfolio program, I took a week long summer institute. At the end of the week, the other teachers and I were still wondering what we were doing. Now I see this as a birth of a new way for me to think about math. I am now a network leader, where I get to talk to other teachers about math instruction.
>
> The state portfolio workshops have been very helpful for many teachers.
>
> The inservices have influenced my attitude toward time spent on basic facts vs. problem solving.
>
> I don't drill as much on basic skills anymore and we changed our textbook to one that lends itself to portfolios and the NCTM standards. We increased the amount of material to teach [and] it used to be all skill and computation, though I did a lot of estimation [too].

The portfolios and the professional development activities associated with them seem to have served as a means for increasing teacher knowledge and, at least for some, of engendering their support for the direction of the reforms. In addition, the move to use portfolio assessment in state certification and program approval means that new teachers will have gained some knowledge and experience developing portfolios themselves during their preservice training. This should add to their ability to use them effectively with their own students.

The portfolios have even been a way of developing knowledge and support among the general public and potential partners in the reform, as problems and debates about the new assessments have been shared openly. Parents are also supposed to see their students' portfolios, which are intended to make more vivid for non-educators as well as for educators what the reforms are trying to do. Such a very public approach to building understanding and

capacity among the broad spectrum of stakeholders is seen as crucial for ensuring its long-term stability and success.

Despite these contributions to capacity made through and in connection with the portfolios, however, some policies and practices surrounding the assessment have mitigated its effectiveness as an avenue for building either individual or organizational capacity. Perhaps the greatest shortcoming from the perspective of the individual teachers involved is that although they have learned about performance assessment and about the reform goals, some teachers feel they have received little assistance either through the networks or inservices in making the link to instruction. One reason for this may be that the assessment is still very new and reliability on scoring the portfolios has been elusive; because of this, the focus of the network meetings seems to have been largely on scoring with less attention to instructional applications:

> The inservices on portfolios were helpful in learning about assessment, but not for instruction.
>
> The implementation differs from teacher to teacher. They can teach writing how they have always done, they just have to do more of it.

In addition, respondents noted that there had been little follow-up on the inservices they attended.

Teachers also complained that the time required for scoring the portfolios, in both math and writing, was taking them away from working on instruction. This seems to imply that the respondents did not see the scoring process or the information they received from it about their students as instructionally relevant—or at least as sufficiently relevant to justify the time commitment. A contributing factor was that both math and writing were given in the same grade and those teachers felt overburdened.

This last fact seems also to have hindered the use of the portfolios to build organizational capacity in the school. At the time of our data collection, the staff development and networks were geared largely to the fourth and eighth grade teachers without much broad schoolwide involvement. Again, this may be due to the early stage in the portfolio development and use, but it is also characteristic of traditional models of professional development, which are aimed at individual teachers rather than schools and other organizational units. It will likely require concerted effort to move beyond this model to one which uses the assessment to foster capacity at the broader organizational level. Some of the respondents in this study had already recognized this as a problem and were moving to spread out the portfolio work beyond the initial two grades.[11]

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[11] It might be recalled that in the example of the California middle school above it was also the school, rather than the state or the district, that designed a means for using the assessment to push forward standards development and learning beyond the grades assessed.

A final note on the limitations of the portfolios thus far is that while teachers used them as indications of the kind of writing or mathematics to stress, our respondents did not talk about actually *using* either the scores (which were not yet reliable) or any information about their students' performance gleaned from their own scoring of the portfolios. To the extent that assessment results are not used by teachers, the intended results orientation of the reform appears weakened.

Michigan. As in Vermont, the state assessment in Michigan is also an expression of the state vision for reform. Indeed, with no curriculum frameworks (like California) nor an articulated vision statement (like the Common Core in Vermont), MEAP is the *main* vehicle for communicating the goals in reading and mathematics, the two curricular areas investigated in this state. The Essential Goals and Objectives on which MEAP is based have long reflected a meaning-centered approach to reading and have also been revised to more closely reflect the NCTM standards in math. The potential usefulness of the assessment as a means of building capacity is enhanced by the fact that the Essential Goals and Objectives are very clear and are open to the public.

Moreover, unlike Vermont, Michigan has instituted a number of policies that have the potential of strengthening the impact of the assessment on organizational capacity. One area where this is the case is curriculum development. The Essential Goals and Objectives are the basis for the state's Model Core Curriculum Outcomes, which in turn are to serve as the basis for district core curriculum. The second area is school improvement. According to state law (PA 25) each school must develop school improvement plans and write improvement goals focused on student outcomes. Because MEAP scores cover several core curriculum areas and must be publicly reported, schools have tended to use these to set some of their improvement goals. Thus the state assessment is providing useful information to schools that assist them in targeting areas for improvement, but the reforms leave discretion at the school site to identify exactly what those goals will be and how they will be achieved. In this respect one could view the assessment as contributing to school capacity by being a resource at the disposal of local school personnel. It has also been the focus of some staff development, primarily in the form of workshops to familiarize teachers with the content of the revised goals and objectives.

Yet MEAP is actually rather limited in its usefulness and use as a tool for capacity building. Unlike Vermont, this limitation derives largely from the nature of the assessment itself, which remains almost entirely multiple choice. This traditional format has several implications. While the content assessed by the MEAP is consistent with the NCTM standards, the assessment is inadequate to fully reflect those standards or the approach to mathematics that underlie them. The reliance on multiple choice, for example, continues to stress a "right answer" approach to mathematical problems; it allows students neither to demonstrate their ability to communicate about mathematics (one of the NCTM standards) nor to show their reasoning on complex problems. One respondent in a Michigan elementary school discussed the negative impact of MEAP in her school.

> We were trying to move lower elementary teachers into a more progressive plan, when MEAP came in and said, 'you can't do developmentally appropriate things.' MEAP sort of sent things backwards. The timing and the way it came down was unfortunate because we were on our way to being more constructivist and developmental. But we are trying to respond to the mandates.

This limitation also means that it is not a very strong tool for teacher learning about new approaches to mathematics. Unlike CLAS, which included extended response items, or the Vermont portfolios, which include even more extended examples of student work, MEAP does not provide teachers with any picture of what actual student work that reflects the standards looks like. Thus, while the results on MEAP may help schools and districts to target areas of deficiency, it does not serve to focus attention on the *quality* of student work. Moreover, there is little reason for teachers to be involved in scoring[12], which is handled by the state. The disjuncture between assessment and instruction, which is so characteristic of American education, is thus maintained, and teachers' knowledge and skills are not substantially increased.

California. If the Vermont and Michigan assessments provide examples of missed opportunities for capacity building, California stands in a league all its own in this regard. The strength of CLAS with regard to capacity is that unlike the MEAP, the content and format of CLAS guided teachers toward new ways of looking at content and a basis for thinking about instruction. Those respondents who had had the opportunity to become familiar with CLAS were very supportive, stating that it was "a wonderful assessment" and "going in the right direction." There were a few teachers who felt that it did not go far enough—for example that the lack of opportunity for revision in the writing assessment meant that it did not truly reflect a process approach to writing. But even these teachers were mainly supportive. In addition, respondents noted that the involvement of teachers in scoring the assessments provided them an excellent learning opportunity.

But while some teachers—like those in the middle school described earlier or those who participating in the scoring—had the opportunity to become familiar with CLAS and use it as a learning tool, the vast majority of teachers and other school personnel were not so fortunate. Instead, an emphasis on secrecy to protect reliability, coupled with management errors, meant that most teachers and districts remained unfamiliar with the actual content or format of the assessment—even up until the time it was administered. And if the educators were in the dark, the public was even more so. Opponents of the reform were able to use this situation to engender vocal opposition, which was in turn used by the governor to kill the assessment, thus garnering conservative political support in his bid for reelection. It should be noted that the very short time table for development of the assessment imposed on the California Department of Education (CDE) by the governor was a major contributing factor.

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[12] Note: MEAP now includes three open-ended questions in math which can be scored at the discretion of the district. Neither of the sample districts in this study appeared to have availed themselves of this option.

Yet, CLAS, even in its developmental stages, provided a potentially powerful tool for teaching the public and California educators about the concrete goals of the reforms and the type of learning and performance students are being asked to do. Failure of the CDE to focus on this use of CLAS left both the assessment and the reforms vulnerable. It is not yet clear what the long term ramifications of this mistake will be.

One lesson from the examples of state assessment in California and Vermont is that the use of state assessment as an instrument of accountability may be in tension with its potential use as an instrument for teacher and system learning. Accountability requires a high degree of reliability. In Vermont, with its limited time and resources, this meant limited attention on using the assessment to improve instruction. In California it engendered a level of secrecy that ran counter to building either capacity or support among a broader spectrum of the public or school personnel. That such would be the results of that tension is not, we believe, a foregone conclusion. A consistent and strategic emphasis on capacity building may have—and may still—lead to alternative scenarios.

A second, and broader, lesson from all three states is that both the design and the strategic use of the systemic tools discussed above can increase or decrease their effectiveness for capacity building. This seems to be true in areas other than assessment. Below we discuss some findings with regard to an area traditionally associated with capacity building, that of professional development.

Effective Professional Development: the Teachers' View

The standards-based reform movement has seen greater emphasis on professional development in recent years, as policy makers and administrators recognize the need for substantial teacher learning if the reforms are to be successful. Thus, even in times of fiscal constraint, many states and even some districts are regularly funding non-instructional days for staff development, though some of our respondents noted that funding has decreased in the past few years. Similarly, the recently reauthorized Elementary and Secondary Education Act (now entitled the Improving America's Schools Act) and other federal legislation target significant funds for professional development efforts aimed at raising student achievement. Professional development is also a major component of standards-based systemic reform strategies.

The professional development activities and strategies of the states and districts in our study have been described elsewhere in this report (Chapters 3 and 4 of this volume and the case studies of volume 2). Our purpose here is to briefly present two central findings with respect to the impact of these professional development activities on the capacity of teachers and schools, as reported by respondents in this investigation. These findings mirror and lend additional support for the second lesson concerning assessments and capacity building, outlined above.

The first of these findings is that if monies going for professional development are to be effective in promoting teacher learning, the programs and activities they support must be well designed and well implemented. This is a straightforward, common sensical conclusion, but given the preponderance of the "training model" of staff development and of generally

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ineffective programs, it is a conclusion that bears repeating and further explication.[13] Through this and other research, a set of design characteristics or principles begins to emerge.

Teachers in this study complained about professional development that was poorly planned, irrelevant to their instructional goals or their needs, unchallenging, or lacking in follow-up. Some activities were viewed simply as a waste of time. Yet most respondents had also had very positive experiences:

> The inservices and replacement units, the Bay Area Writer's Project and many subsequent programs, turned my whole way of teaching around.... Now I have a whole different view of what writing is about. It's a process. You don't need to grade every piece of writing. You should discuss, learn from each other, use writing response groups...

Analysis of both the criticisms and the commendations suggest a model of effective professional development from the perspective of teachers—at least the reform-minded teachers investigated here. Although the format of these programs differed depending on the grade level and discipline, several design principles run through the variations. These principles or characteristics are consistent with the emerging paradigm of professional development in current literature (e.g., see Little, 1993, and McLaughlin and Oberman, forthcoming 1995). We outline these characteristics below, along with representative comments from teachers.

According to our respondents, effective professional development included the following features.

• *The teachers were treated as professionals.* Often the content was teacher determined. Participants conducted investigations and made presentations rather than relying solely on the staff development organizers. Participants were often encouraged to become involved in other professional activities and associations. Stipends and release time were also viewed as concrete indications that the activities were *professional* in nature and the participants time and involvement were valued.

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[13] It is especially important that policy makers understand this lesson. Too often policies and funding for staff development programs pay little attention to issues of quality and therefore get little "bang for the buck." Often there is no systematic evaluation of staff development programs so policy makers don't have any data by which to judge their effectiveness. In California, for example, $13 million are allocated to districts and schools through SB 1882 for professional development to support the reforms. Yet CDE staff have no data on how these funds are used, whether they are aligned with the instructional goals, or on the quality or effectiveness of the programs they support. By contrast, regular, in depth evaluation of the Subject Matter Projects provides valuable information about their use and effectiveness—information that has been instrumental in their ability to maintain funding in times of fiscal retrenchment.

> They validate that you are a professional, give you respect. They pay a stipend. It's not much but you feel professionally validated. They're also very organized.
>
> The people [organizers] are really intelligent—they don't waste your time. They have a way of looking at the kernel of your strengths and weaknesses.

• *The professional development was engaging and intellectually challenging.* There was particular enthusiasm for programs that engaged participants in *doing* science, *doing* math, *reading* literature, or *writing* compositions. The instruction was thus hands on and in some cases inquiry-based.

> It's important that there be some kind of philosophy behind it. That is's not a gimmick, but for example a philosophy about why reading should be taught in this way.... It has to be authentic—something you can agree with and that is challenging, something where you have to think.
>
> Not all staff development is best when it comes from the teacher. There should be ways for teachers to talk to real writers. We need to deal with kids as real writers if that is what you want them to be. You are the writer of your piece; consider what you have to say.
>
> The focus was on giving time to explore and getting to the place where you want answers (for both adults and kids). It's the place where you can't go any further with the information you have. It's more than asking questions because you and they can already do that. It's getting to the point where you need an answer to proceed in your understanding. The teacher then gives you another question or direction to pursue or information to get beyond that.... The idea is you work with things to find an answer, to make sense of things. You work until you find an answer.
>
> The summer [workshop] was frustrating for me because they really make you go through the process as a learner. But that suffering helped me in the classroom because it's difficult to give kids enough time to explore.

• *The content and activities were relevant to the students in the teachers' own classrooms and schools, and they had the opportunity to work with teachers who had similar instructional situations.*

> It's important that they be taught by people who've been in the classroom—preferably by people who are currently in the classroom. And by people who've tried it and give hints about what worked and what didn't.... Also, the material should have been used with similarly situated children as those we have. Suburban kids respond to different stimuli. Kids here needs lots of hands-on activities, not

just sitting still listening to a lecture. Many of our kids *can't* do that. It needs to be something they can involved in and that will be related to them.

They made math fun. I met with other teachers doing the same kinds of things with the same level of students. We had the same frustrations; it was a meeting of like minds. There was a lot of sharing with other teachers. The activities were validating, student-centered, and relatively easy to do. What I mean is that is was relatively easy to come back and try them in class. Sometimes you go to these things and come back with great ideas but it's really tough to get it all together to use in your class.

• *The professional development was on-going.* In many cases there were intensive workshops or institutes, followed by involvement in networks, on-going coaching at the school site, and so forth.

Before [2061] I had done two three-week teacher workshops with [the local science museum]. One was on light and color and the other was on sound. After the workshops we had an artist and a scientist who each came to the classroom five times for a total of ten visits.

• *There were ample opportunities for collaboration with other teachers on specific projects or activities.* Considered especially helpful were those cases in which the teachers collaborated in the design of curriculum or other projects, tried it out, and collectively reflected on the outcome.

Beyond these characteristics, some argued that the very best professional development was site-based. These comments, not surprisingly, came from teachers who were in schools that had on-going mechanisms for site-based professional development.

The very best are more site-based and classroom-based.... My sense is that we have to make programs more site-based. That was you know the people and work with them. [This doesn't have to be the case though.] The Bay Area Writing Project was a closed group, and we got to know each other by spending a lot of time talking specifically about things in the classroom.

This should not imply, however, that even these teachers believed professional development should be entirely site-based. Indeed, even in the most school-based reform efforts in this study, teachers became involved originally through individual professional development opportunities like the writing project, the networks, a summer workshop in science or math, etc. The impact on school improvement was then heightened as on-going opportunities for learning became focused at the school-site. But even then, teachers continued to pursue and saw advantages to cross-site activities as a way of expanding their knowledge and bringing new ideas into the school. Some combination of on-site and cross-site professional development thus seemed particularly useful.

> They have so many good components—a person on site who works with individual teachers and groups of teachers, which was later translated into larger groups of people so we could learn from teachers at other sites, exchange, share, work on curriculum together. What other opportunity like this exists for intellectual exchange? We're basically speaking the same language and at the same level so we can get a lot done...

In the example above, the on-site and cross-site activities mentioned were organized by the inter-segmental group associated with the University of California. However, individual teachers in this school were engaged in a number of other professional development activities as well, both geared to their own individual learning and to improving instruction more broadly at the school.

Using Professional Development to Build Systemic Capacity

This issue of site-based professional development raises the second set of findings—those concerning the relationship between teacher professional development activities and systemic capacity. Underlying this aspect of our investigation was the question: To what extent and in what ways do the professional development activities in sites in our study contribute to long range capacity building throughout the system?

Our conclusion, based on interviews at all levels of the system, was that for the most part, the staff development sponsored by these states and districts remained on an "awareness level"—that is, the activities were short-term, often fairly broad-based efforts to increase teachers' awareness of the reforms, their ability to administer or score the assessments, or their basic familiarity with the new curricula. Examples of such awareness-level activities would include most of the district-organized "staff development days" and programs as well as such activities as the MEAP workshops in Michigan and even the portfolio workshops and networks in Vermont. The reported quality and effectiveness of these activities varied considerably, of course, with some criticized as "worthless" and others providing information or ideas that respondents found quite useful.

Our data suggest that the general reliance on such awareness-focused professional development may have varied sources. In some cases, it appeared to be an unplanned, almost "knee-jerk" response to a reform initiative or new curriculum framework, falling clearly into the "training model" of staff development. In other cases, it represented a more conscious *tactical decision* to concentrate limited resources on a particular focal point considered critical to the reform and also relevant and informative to teachers. Such would appear to be the case with the portfolio work in Vermont, for example. Taken together, professional development of this kind, when connected to the overall reform goals, seemed to serve as a mechanism for broad dissemination of new initiatives and for generating teacher enthusiasm and desire for further learning. In doing so, it was an important aspect of the reform initiatives in these states and districts.

Despite its usefulness, however, such broad but relatively superficial dissemination by itself is unlikely to produce the desired long-term changes in instruction. Absent a more comprehensive *strategic* approach to professional development, these awareness-level activities seemed to fall short of the needed capacity building in two respects. First, they were generally of insufficient duration and follow-up to develop the deep content and pedagogical knowledge necessary to meet the new instructional goals (see Little 1993). Second, they did not appear to be building an infrastructure to promote and sustain teacher learning and instructional improvement over the long term. The networks in Vermont leaned in this direction, of course, but their limited focus on portfolio scoring seems to have weakened their links to instruction and school improvement (see above). This situation may change as the reform matures.

Although much of the professional development discussed by our respondents reflected a rather unidimensional approach to professional development, we did see evidence in these sites of more multi-faceted and strategic approaches as well. The most extensive of these at a statewide level were the California Subject Matter Projects. Sponsored by the state and administered through the President's office of the University of California, these teacher led, independent efforts have become a core element of the reforms in that state. At the heart of the SMPs are the intensive, multi-week workshops in the summer focused on deepening teachers' content knowledge, developing pedagogical strategies linked to that content, and fostering professional habits of reflection.

From the state perspective, the goal is to develop a "critical mass" of teachers in the state to serve as professional leaders of the reform. Such leadership is further developed as participants are recruited into professional disciplinary associations and into on-going networks organized around particular projects or issues or around providing professional development during the academic year to districts and schools. For example, one site of the mathematics project had four on-going networks at the time of our data collection. One focused on issues of assessment, another on equity and access. A third took responsibility for organizing the monthly Saturday seminars on special topics, open to anyone on a walk-in, free-of-charge basis. And the fourth was responsible for responding to requests from districts for staff development. The staff development provided by the SMPs during the school year was a valuable resource to local districts. While of shorter duration than the summer institutes, these workshops were still intensive enough to foster content learning; moreover, they served both to broaden the influence of the subject area reforms and to develop leadership of those network members who organized them.

The fact that nearly all of the California respondents had had experience with the Subject Matter Projects, which several viewed as pivotal to their professional learning, attests to the power of this approach to professional development. Nevertheless, there are clear limitations to what the SMPs can or should be expected to accomplish vis a vis capacity of the system as a whole.

For one thing, the SMPs have limited resources (approximately $100,000 per site per year) and limited reach. One of our state respondents estimated that only 2 percent of California teachers had been through any of the subject matter projects.

In addition, however, the SMPs are professional groups focused primarily on the learning and long-term development of the individual teachers involved. Much of their strength stems from the fact that they are based outside the bureaucracy of the system. In the words of several respondents, the SMPs provide a "professional home" for teachers outside the schools—a place where teachers can think and talk and learn about the substance of their work. This strength brings with it certain limitations, however, as the linkage of the SMPs to *organizational* capacity building are somewhat tenuous. For example, our data indicate that relations with districts and schools are uneven and sometimes strained as project directors strive to protect their participants and alumni from what they fear will be abuse as employer districts try to over-exploit their expertise. In addition, because teachers generally participate as individuals, the link to school level improvement is also less powerful than it might be. One SMP director discussed the downside of this approach:

> My worry about the Subject Matter Projects is if we're truly doing the job that we want to—creating teacher professionalism—but there is no place for that conversation, for reflection, and for continued growth to go on within the system, then we could be doing more disservice than service. [I say this] because teachers go back to their schools and get really frustrated. They say, 'I got out there, I tried to do this, I was making this happen; why isn't it changing what I see for me in schools? Why isn't my voice being heard to deal with what's going on?'

Some strategies were evident in our sites to strengthen the connection between professional development of teachers and organizational development and school change. For example, in California the grade level and other school networks in California, encouraged teachers to participate in the SMPs as part of the school change efforts. The California Alliance for Elementary Education even promoted a two-for-one campaign in which they would pay for a second teacher from a participating school to attend a SMP summer workshop along with a school-sponsored colleague. The idea was to foster a core of knowledgeable teachers who could support each other in improving practice and continued learning at the school site.

Michigan had a different approach to linking individual and organizational capacity building, the Professional Development Schools. The PDS strategy not only brings university professors and teachers at the school site together for on-going collaboration aimed at instructional improvement, it also looks to the future by forging inroads into preservice teacher preparation. This strategy, however, also confronts tensions between school-based improvement needs and university-based preservice teacher education needs. This tension, combined with other factors, such as the high cost of PDS programs and new leadership at the sponsoring agency, has placed the future of PDS schools in Michigan in jeopardy.

Each of the professional development strategies discussed above makes inroads toward addressing the long-term capacity needs of the system with respect to standards-based reform. The SMPs are examples of teacher professional development that builds leadership and deep content knowledge, both through summer workshops and networks and through school year staff development to districts and schools. The school networks in California and the PDS strategy in Michigan are examples of school-based efforts to link such staff development to improvement efforts at the school site and to preservice education.

There remains the question, however, of how the *system* can use these knowledgeable teacher professionals or these reform-minded schools to create an infrastructure that fosters long-term capacity building among its members and throughout its sub-units. One of the California districts provided an example of a district-wide strategy aimed toward that end.

Initiated by an insightful and energetic mathematics and science coordinator in the district's central office, the strategy began and is most developed in the area of elementary science. While science was not a focus of this study, the uniqueness and success of this strategy, coupled with the fact that it is being used as the model for district initiatives in mathematics and early literacy, suggest its relevance for this discussion. The strategy consists of a three-pronged approach based on the district's analyzed need for three types of professional development: awareness initiatives designed for broad dissemination as a catalyst for change; more intensive and on-going efforts focused on content and instructional strategies in curriculum, assessment, or special problem areas; and finally leadership development efforts to foster the capacity of individuals to play leading roles in the other two initiatives.

The science strategy is based on the coordination of four separate programs into one coherent initiative that includes all three types of professional development, linked together and supporting one another. At the core are 24 elementary school teacher leaders, who for the past four to five years have devoted several weeks in the summer and considerable time during the year to learn and do science and science education. The summer institutes focus on the content itself (e.g., geology); then during the year the emphasis shifts to content-based pedagogy. There are two aspects to the science leaders' work during the school year. The first is on-going site-based development. For this, the leadership group is divided into eight triads. Each triad collectively services the science education in each of the three teachers' schools, designing presentations or interactive classroom demonstrations, giving them, refining them, giving them again in a second school, and so forth in an on-going iterative process that is based on and responds to the conditions in each of the three schools. In addition, the whole group meets together five to ten times during the year to discuss the work and consolidate lessons across the sites. The science leaders are given other opportunities for leadership development as well, through the local science museum and the University of California as well as through mentor teacher activities and science curriculum development. The result is that these 24 teachers have formed the core for science education in the district.

On a broader level, over 100 teachers (at least one from each elementary school) have been involved in a program sponsored by the local UC campus which includes summer institutes and follow-up during the year. This group assists in designing and presenting the three professional development days during the year devoted to the new science framework and instructional materials and are point people in their schools for developing the science curriculum.

Then, on the very broadest level, all elementary teachers participate in the SIP day in-services focused on science. These in-services provide the awareness level professional development geared toward motivating broad based change. Thus, while awareness activities are important in this strategy, they are neither its totality nor its core. Rather, the other two initiatives, the science leadership and the UC-sponsored programs, provide the substantive foundation and longer term infra-structure for change.

A crucial element of this strategy is that the initiatives work together and incorporate a multi-faceted, though loosely weaved web of relationships and activities all moving in the same general direction with respect to science education. Considered as a whole, the strategy incorporates individual, site-based, and cross-site approaches to build individual and collective knowledge. Moreover, it fosters collaboration not only among educators but between teachers and practicing scientists. It extends resources by building on-going partnerships with science resources in the area. And it links in with other programs in the district, including the mentor teacher program and Project 2061. And finally, it responds to needs for capacity building at all levels of the system: the needs of the district for a core of knowledgeable practitioners in science who can assist in curriculum, materials, and staff development; the needs of individual schools and of the district for at least one person with deep content knowledge to help implement the science reforms in each school; and the needs of individual teachers for a range of on-going professional development activities that recognize the differing interests, foci, and levels of commitment of individual teachers to any particular reform area.

This district's strategy is of course only one of many possible approaches to linking teacher professional development and systemic capacity building. But it provides insights into the possibilities when capacity building is the goal and when there is leadership and capacity in the district to broker and facilitate learning opportunities.

Continuing Challenges

This chapter has been focused on capacity building in systemic reform. The first section presented a framework for thinking about capacity, both individual and organizational. The second discussed how these sample states, districts, and schools are using elements of standards-based reform to enhance systemic capacity, as well as limitations of that use. In

this final section we highlight briefly several continuing challenges that derive from this work.

Placing Learning at the Center

The first and most critical challenge evident from our analysis of these data is also the most difficult to realize in a system as large and bureaucratic as is public education in the United States. It is to place learning at the front and center of all reform efforts—not just improved learning for students but also for the system as a whole and for those who work in it. For if the adults are not themselves learners, and if the system does not continually assess and learn from practice, then there appears little hope of significantly improving opportunities for all our youth to achieve to the new standards.

For such to happen, however, requires a fundamental change in orientation from the "top-down" mandates characteristic of the education bureaucracy to one in which all work is designed and evaluated with an express goal of enhancing capacity. Organizations and other actors in the "Third Sector"—universities, museums, professional associations, professional development providers—can and will obviously play a major role in accomplishing this goal. They are both resources and partners. As important as these players are, however, our data suggest that their impact on improved learning for all students will necessarily depend on what happens *within* the system itself—and more specifically on whether the system has developed through its multiple levels and sub-units not only the necessary knowledge and skills of teachers but also the commitment and organizational capacity to move towards the more challenging standards.

The previous section provided several examples of ways in which the sites in this study were incorporating capacity building into their overall reform strategies. Too often, however, these attempts appeared piecemeal and short-term. Our data suggest that what is needed is a coherent and *strategic* approach to capacity building—one that takes into account individual learner needs and goals, school needs and goals, and district and state needs and goals, not just for the immediate initiative but for the long term. Only in this way can systemic reform's promise of "top-down support for bottom up reform" be fully realized.

Allocating Needed Resources

Resources are obviously a critical aspect of organizational capacity. But while the need for systemic capacity has expanded with the new instructional reforms, resources—at least fiscal resources—appear to be in ever decreasing supply. Implementing standards-based reform under the current fiscal constraints will require creativity and thought similar to that observed these study sites.

A key target in addressing resource needs will be that of expanding available time to school personnel. Almost to a person, our respondents identified time as the most critical requirement for these reforms to succeed—time for teachers to collaborate in planning and assessing their instruction, time for both teachers and administrators to participate in learning opportunities outside the school, and time for the reforms to mature without their falling prey to fickle or accountability-minded policy makers ready to halt reform if student test scores do not rise immediately. Providing additional time costs money. Should additional funding become available, using it to provide time for professional development would seem a worthy and wise investment. In addition, as existing resources are reallocated to align more with reform goals, a substantial portion should be redirected to time for professional learning. Finally, freeing up schools and districts to restructure and reconfigure schedules so as to provide time for collaboration and learning is possibly the most cost effective means of providing at least some of the additional time required. Given the importance of this goal, we would suggest a combination of all of these approaches.

Another critical way to extend resources and build long-term support for the reforms is through partnerships. Each of our sites was engaged in developing partnerships to extend learning opportunities and provide knowledge. In Vermont, this was an integral component of the reform strategy and a major focus of the State Commissioner's work. In Michigan, the reform has in fact been centered in external organizations, such as the state's professional associations, its mathematics and science centers, and the private Michigan Partnership for New Education. The example of the California district described above shows how a district may extend its resources through partnerships with local universities and museums as well. Even at the school level we found respondents bringing in resources from the outside, as one teacher sought help of city planners when teaching a geometry replacement unit in which students designed and built a scale model of a "polyhedroville" or another organized a panel of experts from the community to whom students would present their work for comment and evaluation. Such utilization of outside resources and the development of on-going partnerships can be an effective way of extending the material and intellectual resources available for school reform and a means of developing the base of support needed to maintain the reform direction over the long haul. Of course, building and maintaining such partnerships over time will be an on-going challenge for all concerned.

One final note on resources seems to be in order. Systemic reform, at least in theory, suggests a more effective and strategic approach to the allocation of resources to improve instruction. Such resource allocation within an overall strategy for systemic reform was not the focus of this study and is an important area for further research. However, we would be remiss if we did not point out that some of our schools lacked some of the very basic resources necessary for effective instruction: space for libraries and even classrooms, personnel, computers and calculators—even rulers and paper. It may be that more equitable and purposive allocation of existing resources will remedy many of these shortages. However, it is also quite possible that helping all children reach more challenging standards may require greater overall financial investment in education and thus greater public commitment to the future. Engendering such commitment is a major challenge indeed.

Managing Multiple Entry Points

Another set of challenges for capacity building arises from the fragmentation of professional development opportunities. All of the teachers in our study had been involved in some kind of reform activity; most had had multiple learning experiences. What was striking about these experiences, however, is how they varied by topic, source, and depth of coverage. Teachers learned about reform through their involvement in subject area workshops, networks and curriculum design, school restructuring efforts, grade level networks (particularly at the middle school), national projects (such as Project 2061 and PACE), the scoring of student essays or math portfolios, bilingual and multicultural education efforts, and through their attendance at district-sponsored workshops that introduced them to concepts of cooperative learning, multiple intelligences, inclusion, alternative assessment techniques, and new district-wide reading, writing, and math programs.

The entry points to education reform were thus many and diverse for these teachers. We identified three advantages to the availability of these multiple entry points. First, they allow teachers to be introduced to reform ideas through an area of interest to them, on a topic with which they are generally comfortable, and in non-threatening ways. Second, they also accommodate teachers' multiple interests and concerns, some of which are based in the disciplines, others of which revolve around their students and school. Third, this diverse set of activities responds to where teachers are on the learning curve and to their multiple and changing levels of commitment and focus. For example, one-day workshop on manipulatives may not significantly increase a teacher's knowledge of math concepts, but it could pique her interest in new instructional techniques and in learning more about new ways of teaching mathematics. Meanwhile, more extensive and collaborative opportunities to deepen her knowledge and skills over a period time are available through summer institutes, networks, or long-term collaborative projects.

While potentially beneficial to teachers, multiple professional development opportunities pose several challenges to schools and policy makers. First, when teachers are involved in many different activities, it is sometimes difficult to link them into a coherent whole in the classroom or at the school site. Second, on the district level, one school may be focused on science, another on early literacy, and another on mathematics. What is the effect when students move from one school to another or when students from these three schools move on to the middle schools? California has tried to address these two potential problems by imbedding a consistent view of teaching and learning in all of its reform efforts—frameworks, grade-level documents, and teacher and school networks. Teachers report that this consistent vision helps. However, our data suggest that a more proactive strategy, particularly at the district level, is required to overcome the inherent fragmentation posed by the variety of opportunities and providers. Finally, one faces the challenge of quality control. How does the education community ensure that these learning experiences are of high quality?

Attending to Public Capacity

Public involvement in and understanding of the reforms was not a focus of this study and we do not have an extensive analysis to offer of the various strategies employed. Yet, we could not help but notice the differing approaches to this issue and the critical impact they can have on the success of the reform agenda. The case of the CLAS assessment in California, the demise of which occurred during the data collection for this study, provides a vivid example of what can happen if the public is left out of the reform equation.

Moreover, how the public is involved and to what end also seem important. Often in the reform literature the need for public involvement is expressed simply in terms of garnering political and public support (i.e., getting "buy-in") without attending to the substantial public learning inherent in such an endeavor. Not only do school people need to increase their knowledge and skills and sometimes alter dispositions and self perceptions to improve student learning; so must parents and the general public. This implies that as the orientation within the school system changes to one of fostering learning for all concerned, so must the relationship between educators and the general public.

Public forums of the sort organized by Vermont educators, or the "visioning" committees established by one of our districts, may be one way of gaining input while educating the public about the direction and goals of the reforms. Media may be another. However, according to the Public Agenda Foundation (Johnson and Immerwahr, 1994), it is to teachers that parents ultimately listen. This suggests that the heart of public (or at least parent) learning may rest primarily with the school. Another form of capacity needed by teachers and schools, therefore, may be the ability to talk to and involve parents in their improvement efforts.

Attending to Needs Outside the School

The issue of public capacity raises an additional set of questions and issues which, though not the focus of this study, cannot be ignored. Based on our review of the literature and our analysis of the data from this investigation, we have argued that if we are to achieve the goal of helping all students meet more challenging standards, the capacity of individuals and organizations within the system to improve instruction and student learning must be increased.

We now take a different but we believe equally important perspective to argue that no matter what happens within the system to develop that capacity, no matter how knowledgeable and effective our teachers and schools become, the goals of standards-based reform will remain elusive if we do not also address the diminishing capacity of communities to support and care for our youth.

We say this in recognition that the goals of this reform movement are not simply to improve student outcomes in the aggregate but to do so for all our young people. It was apparent in the data from these states, districts and schools that many of their students face personal, social, and economic traumas that engage them not only in a struggle for learning but a daily struggle for survival itself. We have no ready answer to the challenge of addressing such stark realities, but in recognition of its importance, we close this chapter with the words of one of our middle school teachers who was only too aware of it implications:

> We need a huge creativity—a blurring of the line between school and society. Especially for our kids who don't succeed academically because their energies are devoted to surviving socially.... [Some of these kids] need more exposure to things without having to worry about their alcoholic mom or whatever. And doing things on site is not enough. For instance, a few years ago we had a very talented teacher here who built a darkroom and got kids involved in photography. It was a wonderful on-site program. But now, five years later, every one of those kids is dead.
>
> We have to go beyond wonderful constructivist programs.

Chapter 7

Implications of Study Findings for Policy and Research

The three states investigated in this study are all attempting some variation of standards-based systemic reform. As discussed in previous chapters, the contexts, goals, and histories differ among the states. Specific strategies also differ, as do the sources of leadership for the reform efforts. Yet in each case, the goal is improved student learning, and the overall approach for attaining this goal has been to raise standards and to increase coherence (to varying degrees) among elements of state education policy. Our data suggest that, despite differences among the states, this general strategy brings with it common issues and needs, some of which we have outlined in the previous three chapters.

We believe these commonalities across such different contexts suggest some common lessons for policy makers, while also raising important issues for further study. We discuss the potential lessons in the first part of this chapter under the rubric "implications for policy." Our intention in this discussion is not to imply that all states *should* take up systemic reform as their strategic approach; we acknowledge that there are many possible roads to improved student learning. However, those states embarking on a standards-based strategy may find it helpful to consider the issues and suggestions raised here.

The second section of the chapter outlines several key areas for further research that have emerged from this investigation. On one level, the need for further research derives directly from our limited sample of states and schools and thus from the need to explore the relevance of our findings to other settings. In addition, however, a number of patterns and issues have emerged from the data which were not part of our original focus and which were therefore not investigated fully or uniformly across the states. These, we believe, merit further concentrated attention. And finally, we believe it is important to note that the research base in this area is still quite limited. We as a nation simply have very little experience with standards-based reform, and for researchers, as for teachers engaged in this process, new experience continually breeds new questions. We hope that our delineation of some of those questions will spark interest among policy makers, funders, and practitioners as well as among others engaged in investigations of educational policy and practice.

Implications for Policy

General Implications

Our data suggest that states and localities who choose to take a standards-based approach to instructional improvement should consider the following issues.

1. A guiding vision of reform that goes beyond subject-specific content may be important for assisting states, localities, and schools in their efforts to establish and maintain coherent reform efforts. Two of our study states had articulated such visions. State-level informants in Vermont, for example, reported that the Common Core of Learning enabled them to communicate more effectively with both community and school people about the goals and direction of the reform. In addition, this document has become a touchstone in their own efforts to pull together the various activities at the state level and ensure that they keep moving in the intended direction. In California, informants at all levels of the system referred to the importance of the curriculum frameworks reflecting a common vision of learning. Beyond this, the grade level documents help to connect the pieces of reform into a vision of schooling and school change for elementary, middle and high schools in the state. Principles like "teacher as professional" (Alliance for Elementary Education) communicate a philosophical as well as a tactical approach to reform. And both of the California middle schools in this study had been deeply influenced by the model of middle school education articulated in "Caught in the Middle."

2. Coherence among the elements of state education policy (e.g., alignment of assessment with curricular goals and content) seems to help facilitate reform in districts and schools. This coherence was cited in all three states—both in terms of the benefits of coherence and the difficulties encountered (particularly by teachers) when it is lacking. One obvious advantage of policy coherence is that it can result in more consistent (and thus stronger) signals to both teachers and students about what is important for teachers to teach and for students to learn. A second potential advantage is that it may allow for more focused and more efficient instruction. For example, if curricular goals and assessments are aligned, teachers do not have to divide their time between teaching a curriculum that stresses certain knowledge and skills on the one hand and preparing students for standardized tests which assess different skills and knowledge on the other. Finally, coherence among the elements of reform provide additional opportunities for capacity building (see below).

3. Articulating high standards for students and aligning other policies with these learner goals is necessary, but not sufficient, to help all students meet more challenging standards. Many reformers now recognize the tremendous changes the new standards demand of teachers—in what and how they teach and in their role in their classrooms and schools. These changes require teachers not only to learn new content and skills but to *un*learn previous, less effective ones. In addition, administrators, teacher educators and other participants in the education of our youth must also change their roles and expectations. Therefore, policymakers must turn their attention to mechanisms for developing the *capacity* of the system and its teachers to improve student learning. (See **Implications for Capacity Building** below.)

Signals from the state—even those that are coherent and thus relatively strong—will not necessarily reach down into schools and to teachers in their classrooms. Our data indicate that communication about the reform agenda is not something that can be accomplished just from the center. Rather, those teachers and administrators who were knowledgeable about

the reform goals and strategies were those who were involved in using them. Communication of the reform agenda had occurred over time through face to face interactions with other educators, often in teacher networks or school-based efforts. States may do well, therefore, to incorporate such mechanisms into their overall strategies.

4. The experience of these states demonstrates the importance of developing strategies and mechanisms that allow for consistency over time, even in the face of political and fiscal changes. Nearly all respondents—especially those who had been engaged in reform efforts for an extended period of time—emphasized how long it takes for educators to learn new content and approaches and for institutions to change to facilitate new instruction. This consistency over time may be facilitated through several strategies, including:

- *Stable alliances among policy makers.* This is especially important because education policy in most states, including those in this study, is subject to multiple lines of authority (e.g., governor's office, elected or appointed state board, state legislature, elected or appointed chief state school officer, the federal government, and so forth.) Where alliances among the main policy makers are more stable, as in Vermont, there appears to be greater possibility for maintaining the reform effort over time. This stability, of course, may depend on bipartisan support for the reform direction. In California, the partisan battles between the governor and the Superintendent of Public Instruction and within the legislature often have substantially weakened—and may eventually maroon—the reform effort.

- *Strategies for public involvement.* Our data suggest that if the reforms are to be maintained over time, public involvement must be a consistent goal from the outset. In these three states, a tension between professional and public authority was evident. Vermont used a strategy for managing this tension that places broad public goals at the heart of the reform. These goals are then fleshed out through professionally-based definitions of curricular content. By contrast, in California, involvement of and even communication with the public has been much weaker, with the result that public confusion and dissention (coupled with partisan politics) was a major contributor to the demise of the CLAS assessment last year.

- *Supportive mechanisms outside the political and bureaucratic system.* Examples from these states included teacher and school networks, professional associations, and collaborative endeavors and organizations. Such mechanisms may help buffer the reforms from shifting political winds while at the same time avoiding the morass of red tape inherent in most public institutions. In addition, they may also help to broaden the political base for reform. In California, for example, the Subject Matter Projects have developed an independent political base through which they have been able to garner additional funds from the state legislature even during times of general fiscal retrenchment. Similarly, the Michigan legislature appropriated additional funds to expand the number and scope of that state's Mathematics and Science Centers, although it reduced support for the state department of education.

• *Careful attention to the sequencing of reform elements.* Our data, and those of other studies (e.g., Fuhrman, Massell et al., 1992; Fuhrman, 1994; and Massell and Fuhrman, 1994), suggest that there are trade-offs regarding the sequencing of reform policies and elements (e.g., the use of state assessment versus frameworks or standards as the leading instrument, the timing of accountability mechanisms, etc.). For example, if curriculum reform precedes assessment reform, teachers are unclear about whether they should teach the new curriculum or teach to the old test, which is often used as an accountability mechanism. The old test may also provide an inaccurate measure of student performance. On the other hand, if assessment precedes curriculum reform, teachers may be unclear about what they are expected to teach and how. States embarking on systemic reform need to be aware of and give ample consideration to these trade-offs. In addition, they should give thought to possible incompatibilities between early reform elements and the direction they eventually want to take. For example, beginning with discipline-based assessments, as Vermont has done in their mathematics and writing portfolios, may contradict the long-term goal of interdisciplinary frameworks and instruction. Not all such contradictions can be anticipated, of course, but to the extent possible, states and localities should consider carefully the potential long-term ramifications of the tactics they employ at any given stage of the process.

• *Reasonable and appropriately timed accountability systems.* One issue in the sequencing of reform policies concerns the institution of accountability mechanisms, particularly those based on student performance. Although accountability was not a focus of this study, the strong finding that change (both individual and organizational) requires considerable learning and considerable time suggests that in the early stages of the reform efforts more emphasis may need to be placed on incentives and capacity building than on rewards and sanctions for student achievement. It should be noted that respondents in this study were not opposed to being held accountable for student learning, and several argued for the employment of much stronger measures than those currently in use. However, they also stressed in various ways the importance of timing in accountability—of giving teachers and others a chance to understand, learn, and change. In Vermont, the chief state school officer recognized early the need for such time, which he successfully communicated to legislators in his state. His success in postponing public accountability for results is seen by Vermont reformers as having been both necessary and helpful, especially given the problems they have encountered with the reliability of the assessment.

5. The goals of the reform may need to strike a balance between current and desired practice, between old and new ways. One reason is that it takes time to change and teachers will inevitably mix old and new approaches and models, whether or not such mixture is encouraged. In addition, the system as a whole is still gaining experience and learning about new approaches. This is true both for content and instruction (e.g., whole language, grouping strategies) and for structure (e.g., teams and departments in middle school). Our lack of knowledge about the effectiveness of such approaches raises the danger of "throwing out the

baby with the bath water" if reformers rush toward their exclusive institution in practice. This seemed to be the sentiment of middle school teachers in one California site where the departments had been completely and unilaterally disbanded in favor of an interdisciplinary family structure and to the neglect of teachers' expressed needs for disciplinary support and articulation. Because both teachers and the system are learning as they are reforming, the balance between old and new may shift as the reform evolves and practice changes.

6. Deliberate, consistent, and pervasive strategies to ensure equity are necessary if the reforms are to be for all students. As we saw in our three study states, these strategies are likely to differ depending on the student population and the specific conditions in each state or district. But those strategies might include such elements as:

- Attention to involving schools with large numbers of disadvantaged students in the reform through special recruitment campaigns, additional resources, coaching and other technical assistance, etc.

- Curricular content, materials and pedagogical strategies that are sufficiently flexible and appropriate for addressing the diverse needs and background of today's students. Many teachers pointed to the advantage, for example, of interdisciplinary projects as avenues for students with diverse talents to learn and to experience success in school. Others pointed to the need for primary language instructional materials.

- Recruitment, preparation, and on-going professional development of teachers and other educators who are themselves from diverse backgrounds and/or who have skills to address students with special needs (e.g., limited English proficient students or students with disabilities).

7. Overall reform efforts may be facilitated through strategies that help teachers, schools, and districts pull together individual initiatives and multiple frameworks into a more coherent whole. Developing a vision and school networks for reform at the various grade levels, as in California, is one such strategy. Similar school networks also exist within districts in some states or across states through professional associations or reform collaboratives. Interdisciplinary curricula is another strategy for helping teachers pull together the various reform threads. This seems to be a central aspect of Vermont's state level approach and was evident on a school level in many of the sites in this study, particularly in those that had adopted a project-based approach as part of their reform.

Implications for Capacity Building

1. State leaders must realize that setting out a framework for what should be taught and learned in school will not result in much change if teachers do not know the content or how to teach it. It is critical that states and localities follow guidance given to teachers with the opportunity for them to learn what they need to know to make appropriate use of that

guidance. This was a theme across schools, across districts, and across states in this study. Moreover, the need for developing and enhancing capacity exists at all levels of the system, among all actors engaged in education and education reform.

2. Consistency, alignment and coherence can provide opportunities for learning throughout the system, but these opportunities need to be taken advantage of. You can align assessment with frameworks, for example, and hope that teachers by experiencing both will get reinforcement for the desired conceptions of content and pedagogy. But you could go beyond the notion of reinforcing signals by using the assessments (or textbook adoption, etc.) as more direct learning tools. For example, teachers involved in the development and scoring of the assessments in California and Vermont report that the experience was an important and useful professional development opportunity because of the level of discussion and debate over the content and standards required in such processes. Participating in these activities with other teachers also enhanced their sense of themselves as learners and professionals and thus increased their disposition toward change.

3. It is important for teachers and others to have *on-going* avenues for professional development, both inside and outside the school. Many of our respondents emphasized that their learning deepened over time as they gained experience putting their new ideas into practice and encountering new questions and dilemmas in the process. Teachers noted that they often circled back (sometimes a year or more later) to ideas encountered in a particular learning situation because those ideas had taken on new meaning or salience in light of their changing practice. In this process, teachers noted the importance of having someone to turn to for assistance as their understanding develops and as new issues arise. While this may be another teacher at the school, our data also suggest that it is useful for schools as a whole to have a consistent source of support and guidance from outside the school—a coach or consultant, for example, that follows the school's development and works with the staff over a period of months and years.

4. Universities play a critical role in teacher development and many provide on-going support and guidance to schools as well. While our study did not examine pre-service preparation programs, our respondents raised a number of challenges for policymakers as they work to tie higher education activities more closely to K-12 systemic education reform efforts. For example, states and universities have overlapping roles and responsibilities in deciding what and how prospective teachers are taught and in determining which individuals are qualified to teach. In light of the legal and traditional independence of higher education institutions, and the tradition of faculty autonomy, state policymakers must develop strategies for persuading colleges and universities and their faculty to change their current practice. The shift to a results-oriented program approval process for teacher education programs in Vermont is one such strategy. Similar tensions exist regarding the role of higher education in teacher professional development: What should be the respective roles of teachers, schools, school districts and universities in defining needs and designing professional development activities?

5. Capacity building efforts must take into account the organizational and systemic needs for capacity as well as the needs of individuals within the various units.

- Individuals at all levels of the system will be taking on new roles and responsibilities—this often requires both learning new content and learning how to perform their jobs in new ways. For example, administrators will need to serve as coaches and facilitators of reform and of adult learning in their buildings and districts, just as teachers need to take on new roles as facilitators of student learning. In addition, everyone needs an understanding of the new learning goals of students if they are to move in this direction.

- Professional development strategies that focus on individual teachers or administrators, while important, are by themselves not sufficient. Our data indicate that because teachers are actors within complex organizations, their opportunity to learn and their ability to act derive in part from the capacity of their school as a collective body. Without a supportive school environment, an individual teacher's ability to make use of new knowledge or skills to effect real change is limited. Therefore, policy makers would do well to develop strategies that build capacity and support change in the organization (e.g., school) as a whole.

- A critical part of building systemic capacity is the development of leaders at all levels of the system—particularly leaders with deep knowledge of instruction and instructional issues. Developing and supporting such leaders should therefore be an integral part of any capacity building strategy.

- Districts are potentially a key force in building the capacity of teachers and schools in their jurisdiction. Yet, state and local reform strategies in our sites were not clear about the role(s) the district office and schools should play in building capacity and supporting teacher and school change. For example, California's teacher and school networks by-pass the school district, making it difficult for the district to spread knowledge and disseminate lessons from these activities to other teachers and schools. Policymakers should think hard about the role of districts in reform and should work with district administrators to develop strategies for enhancing their capacity-building efforts.

One of our California sites provides an example of how a district can use knowledgeable teacher professionals to build system-wide capacity. This district's strategy coordinates four separate programs into one coherent initiative that provides three levels of professional development: awareness initiatives designed for broad dissemination as a catalyst for change; more intensive and on-going efforts focused on content and instructional strategies in curriculum, assessment, or special problem areas; and finally leadership development efforts to foster the capacity of individuals to play leading roles in the other two initiatives. (See Chapter 6.)

Some of our data pointed to potential conflicts between teachers' on-going involvement in professional development through networks and activities outside the system and their involvement in facilitating change within the school itself. As in many aspects of this study, what seems to be needed is a balance between activities outside and activities inside the school and district. Effective ways of defining and creating this balance, however, are the subject for further research.

6. Capacity-building strategies need to recognize that there are multiple levels for involvement of both teachers and administrators. Some will be interested and able to approach a particular topic or content area only at the level of awareness—a general knowledge of the main direction and issues. Others will get more deeply involved in the area and still others may be potential leaders at the district, state, or even national levels. Strategies that work on multiple levels will be more likely to lay a firm foundation for long-term change. Mechanisms that allow participants to move in and out of professional development activities as appropriate over time, some as leaders, some as participants, will also be important for sustaining involvement.

7. Capacity building strategies and activities, like all other aspects of reform, must pay attention to diversity. Some of these have been discussed in the previous section on general policy implications. They include targeting teachers and schools serving large numbers of disadvantaged students, targeted attention to the recruitment and professional development of teachers of color, and attention to preparing all teachers to meet the needs of culturally and linguistically diverse student populations.

8. Stakeholders and supporters outside the system must also learn and change if the reforms are to be successful. Therefore, attention should be paid to enhancing the capacity of parents, the public, and community organizations and businesses to understand and participate in the reform efforts.

9. Resources are a critical aspect of organizational capacity, and our respondents identified time as the most critical requirement for these reforms to succeed -- time for teachers to collaborate in planning and assessing their instruction, time for both teachers and administrators to participate in learning opportunities outside the school, and time for the reforms to mature. Our sites provided additional financial support for professional development and/or they reallocated resources through restructured and reconfigured school days and school weeks. They also extended resources and built long-term support for reforms through partnerships with professional associations, local universities and museums and other educational organizations. Policymakers must also ensure that schools have the resources necessary for effective instruction—space for classrooms and libraries, personnel, computers and calculators, and even paper and rulers. Some of the schools in our sample lacked these basic requirements.

Implications for Research

Our work in these states and school districts suggests questions to be addressed in further research. Some of these questions are about the role of capacity building in systemic reform; other questions address broader aspects of reform.

Questions about Systemic Reform

Our study suggests several research questions that address general issues in systemic reform:

1. Some reform efforts highlight changes in the structure of schooling (e.g., school-based management), while others highlight changes in the content of instruction (e.g., new curriculum frameworks). Are these independent changes, or do changes in structure either lead toward changes in content or at least make such changes more likely? How do these changes ultimately lead to improvement in learning? Peterson, McCarthey, and Elmore (in press) have begun to work on these questions, but much remains to be done.

2. Many of our respondents talked about the need to have a "critical mass" of reform-oriented teachers in a school before the school as a whole (e.g., curriculum, assessment and structure) could change. Their premise was that difficult changes are unlikely to be sustained without substantial peer support. (We see a link here to building the capacity of organizations, rather than only building individual capacity.) What is the empirical evidence for this claim about critical mass? What can we learn about the number or fraction of individuals needed to reach this point?

3. Systemic reform is hard work. Additional research is needed to understand what motivates teachers to invest themselves in this work. While some of the teachers in our study received some kind of extrinsic reward for their involvement in professional development activities (such as stipends or continuing education units), most were driven by intrinsic incentives—a desire to learn more about reforms in the teaching of math and language arts, and to improve their practice in order to become more effective teachers. But, because we chose schools for their involvement in education reform, these teachers, and the schools in which they work, are not representative of the general population of educators and schools. How can other teachers and educational leaders be helped to develop a continued commitment to reassessment and reform? For policy makers, it is important to understand the incentives and disincentives in the educational system.

Questions about Capacity Building

Our work also points up questions to be addressed in further research on capacity building in the context of systemic reform. These questions address four topic areas: organizational levels (especially the school and district); opportunities for teachers to develop new capacities (e.g., use of new assessments); effects of changes in capacity building (e.g., provision of time for discussion and reflection); and capacity-building for others in the educational system..

1. As we have noted earlier, capacity building should be thought of in organizational, as well as, individual terms. Many questions remain about the roles of organizational units in capacity building. For example:

- We need a better understanding of the relationship between what goes on inside the school and what goes on outside the school with regard to teacher learning. In the schools we visited, connections to organizations and projects outside the teacher's school seemed critical in motivating learning and in providing opportunities for teachers to learn about areas such as subject matter and pedagogy. But attention to outside activities draws energy away from school change, creating a tension that was quite salient in some schools. Huberman (1995) proposes a model of how schools can use periodic input and consultation from external experts to facilitate teacher and school change. This model might be used to guide research and manage tensions in this area.

- Research is needed on the role that school districts do and should play in capacity building. In several of our schools, we found that the district played an important part is encouraging professional development or helping to set its direction. More work is needed to understand what are appropriate and effective roles for the district and how these roles may differ by district size and context.

2. A second set of research questions relates to the opportunities that are available for teachers (and others) to develop new capacities that are central to current reforms, such as how to collaborate with other educators or how to use information from new assessments. Much of the discussion about capacity building focuses on general structural features such as networks and follow-up. But attention is also needed to how capacity building needs to be configured for new capacities such as those just mentioned. It may be, for example, that learning to collaborate is something that is best addressed together with learning about teaching a particular subject, rather than being considered in a separate workshop or course. We give one example of the research questions that might be asked, but parallel questions could be asked about learning to collaborate, learning uses of assessment, or learning other things important to systemic reform.

- Research is needed to determine what opportunities teachers have to learn how to use student work as a vehicle for reflecting on and changing practice. A call for attention to student work was especially prominent in California, but is also a part of

more general reform directions. Where can teachers currently go to develop this new capacity? What might be done to create additional opportunities for learning?

3. As current ideas about capacity building are put into practice, a third set of research questions becomes important. Specifically, what are the effects of changes that currently seem attractive? Do they lead to the expected enhancements in capacity? What are the important unintended consequences. We give three examples of such research questions.

- "Time" is frequently mentioned as a condition necessary for teachers to learn how to think and practice differently. Interviews reveal both that most actors know that teachers feel the lack of time for discussion and reflection, but that it is often financially or politically difficult to increase time given to such work. When the system is changed to give more time, it is critically important to understand how the time is used, or what leads to one use of time rather than another. Our work in Michigan indicated that reallocated time may sometimes be used for administration and coordination, rather than for focused discussions of teaching and learning. What leads to such an outcome? Are there cases where time is used differently?

- In some of the sites we visited, plans for teachers' professional development seemed detached from the needs of systemic reform. In Vermont, the system for relicensure had recently been altered to build a stronger connection between the agenda for professional development and that state's reform goals. Policy makers hoped that the changes would lead to closer alignment and ultimately to changes in practice. Strong arguments are often made, however, about letting teachers set the agenda for their own professional development. It will be important to understand how the move to align professional development with school, district and state standards interacts with the commitment to letting teachers set their own learning agenda.

- State policy makers and others see that a wide range of people and organizations offer professional development for teachers. If "system" suggests order and organization, then those offering professional development do not make up a system—they form an open market, in which good information about the quality and usefulness of what is available is often limited. This situation has led some policy makers to work towards greater clarity and organization, at the very least by publishing basic information on providers. Research is needed on the effects of trying to bring order to this "system." If such efforts have a strong positive effect, they should be encouraged. But it might also be that order would bring with it the negative trappings of bureaucracy—slow response, hesitancy to take risks, and so on.

4. Our research, and the research of many others, has focused on the capacity of teachers to improve student learning. In addition, we need to develop a research agenda that looks at the capacity of others in the education system to respond to new expectations for students, and that identifies effective strategies for building the capacity of administrators, policy-makers, parents and the public.

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